TEST REPORT

Applicant Name :	AudioCodes Ltd.
Address :	1 Hayarden Street, Airport City, Lod. Israel
Report Number :	SZ6210924-49813E-RF-00C
FCC ID:	XAK455HDB

Test Standard (s)

FCC PART 15.407

Sample Description

Product Type:	IP Phone 455HD
Model No.:	C455HD
Multiple Model(s) No.:	N/A
Trade Mark:	Audiocodes
Date Received:	2021/09/24
Date of Test:	2021/10/27-2021/12/06
Report Date:	2021/12/07

Test Result:	Pass*

* In the configuration tested, the EUT complied with the standards above.

Prepared and Checked By:

Ting Lv

EMC Engineer

Approved By:

Candy Li

EMC Engineer

Note: This report may contain data that are not covered by the A2LA accreditation and are marked with an asterisk "★ ".

Shenzhen Accurate Technology Co., Ltd. is not responsible for the authenticity of any test data provided by the applicant. Data included from the applicant that may affect test results are marked with an asterisk '*'. Customer model name, addresses, names, trademarks etc. are not considered data.

TABLE OF CONTENTS

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Frequency Range	5G Wi-Fi: 5150-5250MHz; 5250-5350MHz; 5470-5725MHz; 5725-5850MHz
Mode	802.11a/n20/n40/ac20/ac40/ac80
Maximum Conducted Average Ouput Power	5150-5250 MHz: 13.37dBm 5250-5350MHz: 13.84dBm 5470-5725MHz: 13.85dBm 5725-5850 MHz: 12.53dBm
Modulation Technique	OFDM
Antenna Specification*	Antenna gain: 5150-5250 MHz:3.52dBi,5250-5350MHz: 3.03 dBi 5470-5725MHz: 2.59 dBi,5725-5850 MHz:1.97 dBi (It is provided by the manufacturer)
Voltage Range	DC 12V from Adapter or DC48Vfrom POE
Sample serial number	SZ6210924-49813E-RF-S1 (Assigned by ATC)
Sample/EUT Status	Good condition
Adapter information	Model: RD1202000-C55-29MG Input: AC 100-240V, 50/60Hz, 0.6A Output: DC12.0V, 2.0A

Objective

This test report is in accordance with Part 2-Subpart J, Part 15-Subparts A and E of the Federal Communication Commissions rules.

The tests were performed in order to determine compliance with FCC Part 15, Subpart E, section 15.203, 15.205, 15.207, 15.209 and 15.407 rules.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices. And KDB789033 D02 General U-NII Test Procedures New Rules v02r01.

All emissions measurement was performed at Shenzhen Accurate Technology Co., Ltd. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Each test item follows test standards and with no deviation.

Measurement Uncertainty

Parameter		Uncertainty
Occupied Channel Bandwidth		5%
RF Frequency		$0.082*10^{-7}$
RF output power, conducted		0.73dB
Unwanted Emission, conducted		1.6dB
AC Power Lines Conducted Emissions		2.72dB
Emissions, Radiated	9kHz - 30MHz	2.66dB
	30MHz - 1GHz	4.28dB
	1GHz - 18GHz	4.98dB
	18GHz - 26.5GHz	5.06dB
	26.5GHz - 40GHz	4.72dB
Temperature		1℃
Humidity		6%
Supply voltages		0.4%

Note: The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

Test Facility

The test site used by Shenzhen Accurate Technology Co., Ltd. to collect test data is located on the 1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China.

The test site has been approved by the FCC under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No.: 708358, the FCC Designation No.: CN1189. Accredited by American Association for Laboratory Accreditation (A2LA) The Certificate Number is 429 7.01.

Listed by Innovation, Science and Economic Development Canada (ISEDC), the Registration Number is 5077A.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in an engineering mode, which was provided by manufacturer.

The device supports 5G Wi-Fi 802.11a/n20/n40/ac20/ac40/ac80 modes.

For 5150-5250MHz Band, 7 channels are provided to testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	44	5220
38	5190	46	5230
40	5200	48	5240
42	5210	/	/

For 802.11a/n20/ac20 mode: channel 36, 40, 48 were tested;
For 802.11n40/ac40 mode: channel 38, 46 were tested.
For 802.11ac80 mode: channel 42 was tested.

For 5250-5350MHz Band, 7 channels are provided to testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
52	5260	60	5300
54	5270	62	5310
56	5280	64	5320
58	5290	/	/

For 802.11a/n20/ac20 mode: channel 52, 56, 64 were tested;
For 802.11n40/ac40 mode: channel 54, 62 were tested.
For 802.11ac80 mode: channel 58 was tested.

For 5470-5725MHz Band, 18 channels are provided to testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
100	5500	120	5600
102	5510	122	5610
104	5520	124	5620
106	5530	126	5630
108	5540	128	5640
110	5550	132	5660
112	5560	134	5670
116	5580	136	5680
118	5590	140	5700

For 802.11a/ n20/ac20 mode: channel 100, 116, 140 were tested;
For 802.11n40/ac40 mode: channel 102, 110, 134 were tested.
For 802.11ac80 mode: channel 106, 122 were tested.

For 5725-5850MHz Band, 8 channels are provided to testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	5745	157	5785
151	5755	159	5795
153	5765	161	5805
155	5775	165	5825

For 802.11a/n20/ac20 mode: channel 149, 157, 165 were tested;
For 802.11n40/ac40 mode: channel 151, 159 were tested.
For 802.11ac80 mode: channel 155 was tested.

EUT Exercise Software

"secureCRT.exe*" software was used to test. The software and power level was provided by the applicant.

The worst case was performed under:

U-NII	Mode	Data rate	Power Level*		
			Low Channel	Middle Channel	High Channel
5150 – 5250MHz	802.11a	6Mbps	46	46	46
	802.11n-HT20	MCS0	46	46	46
	802.11n-HT40	MCS0	43	/	46
	802.11ac20	MCS0	46	46	46
	802.11ac40	MCS0	43	/	46
	802.11ac80	MCS0	/	40	/
5250 – 5350MHz	802.11a	6Mbps	47	47	47
	802.11n-HT20	MCS0	47	47	47
	802.11n-HT40	MCS0	47	/	47
	802.11ac20	MCS0	47	47	47
	802.11ac40	MCS0	47	47	47
	802.11ac80	MCS0	/	42	/
5470 – 5725MHz	802.11a	6Mbps	45	45	45
	802.11n-HT20	MCS0	45	45	45
	802.11n-HT40	MCS0	40	40	40
	802.11ac20	MCS0	45	45	45
	802.11ac40	MCS0	40	40	40
	802.11ac80	MCS0	40	/	40
5725 – 5850MHz	802.11a	6Mbps	45	45	45
	802.11n-HT20	MCS0	45	45	45
	802.11n-HT40	MCS0	45	/	45
	802.11ac20	MCS0	45	45	45
	802.11ac40	MCS0	45	/	45
	802.11ac80	MCS0	/	45	/

The worse-case data rates are determined to be as follows for each mode based upon investigations by measuring the output power and PSD across all data rated bandwidths, and modulations.

Duty cycle

Test Result: Pass. Please refer to the Appendix.

Equipment Modifications

No modification was made to the EUT tested.

Support Equipment List and Details

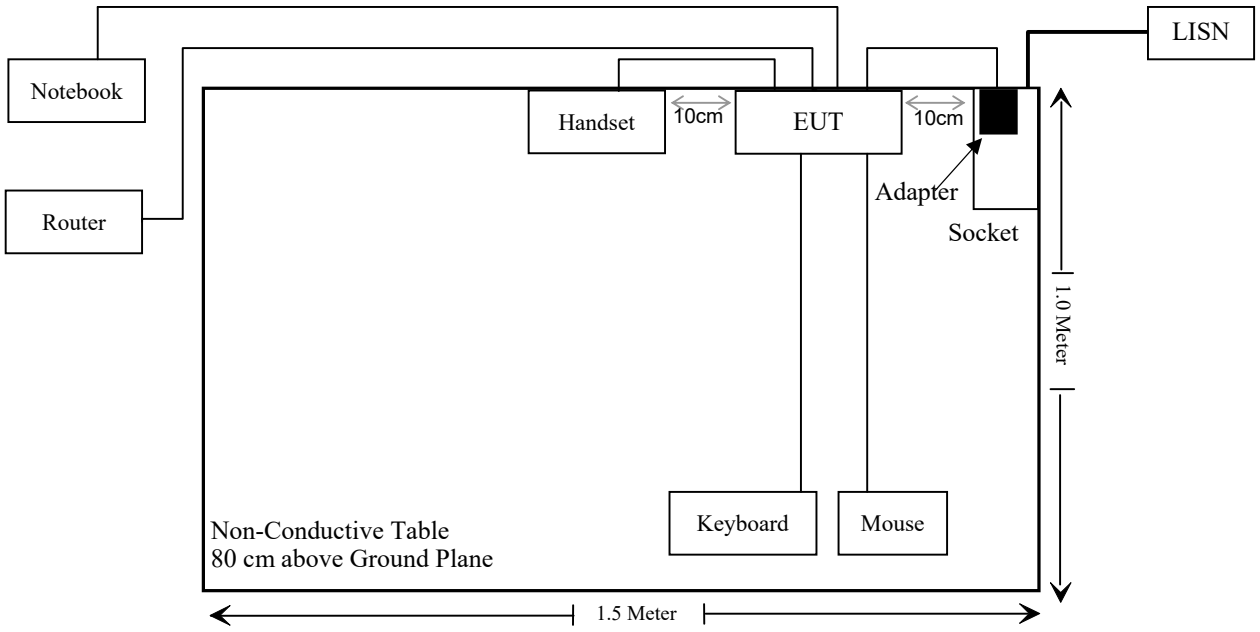
Manufacturer	Description	Model	Serial Number
DELL	NoteBook	Latitude E4710	PC201911252059
HUAWEI	Router	WS5100	A4933FEF1D01
LUOJI	mouse	MS111-L	CN-09RRC7-48729-38F-0H8S
DELL	Keyboard	KB212-B	0K6KPN
GOSPELL	POE	G0720-480-050	212701319

External I/O Cable

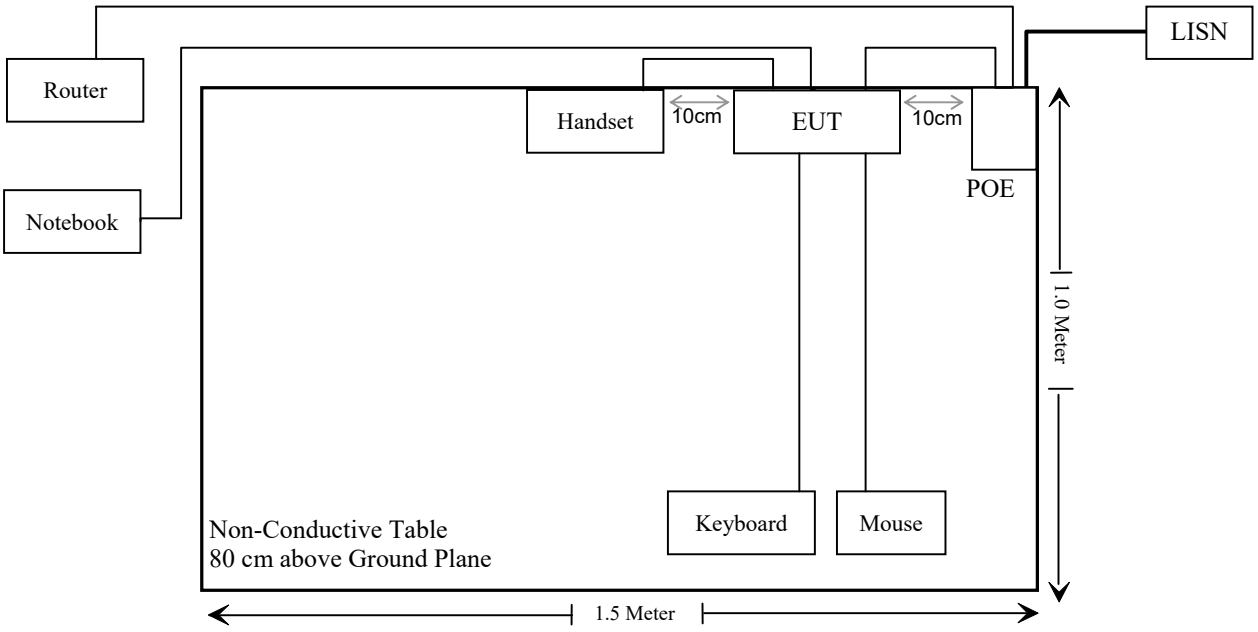
Cable Description	Length (m)	From/Port	To
Un-shielding Detachable DC Cable	1.2	EUT	Adapter
Un-shielded detachable RJ45 Cable	8.0	EUT	NoteBook
Un-shielded detachable RJ45 Cable	8.0	EUT	Router
Un-shielded detachable RJ45 Cable	8.0	Router	POE
Un-shielded detachable RJ45 Cable	0.8	EUT	POE
Un-shielded detachable USB Cable	1.5	EUT	Keyboard
Un-shielded detachable USB Cable	1.5	EUT	Mouse

Block Diagram of Test Setup

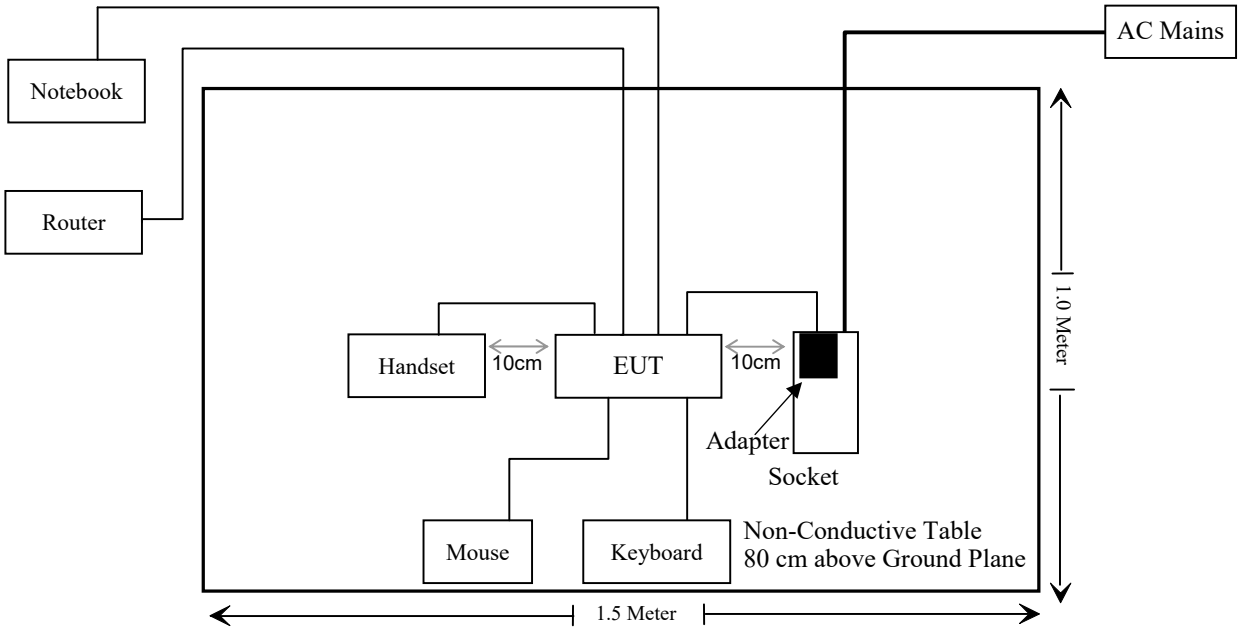
For conducted emission: (Adapter)



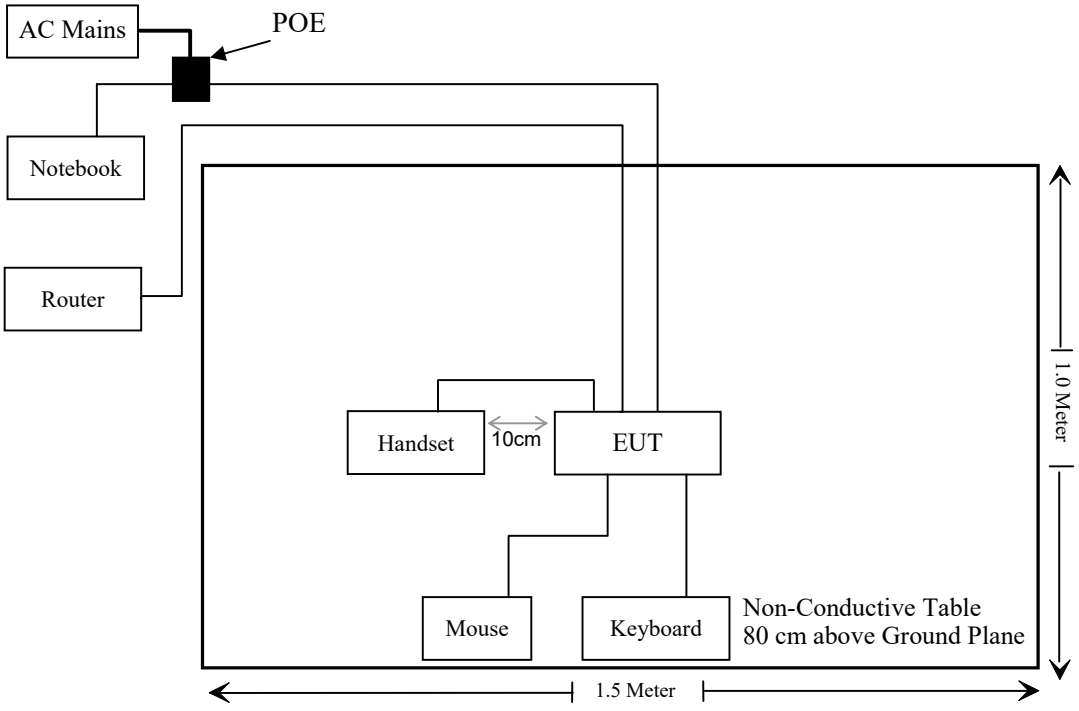
For conducted emission: (POE)



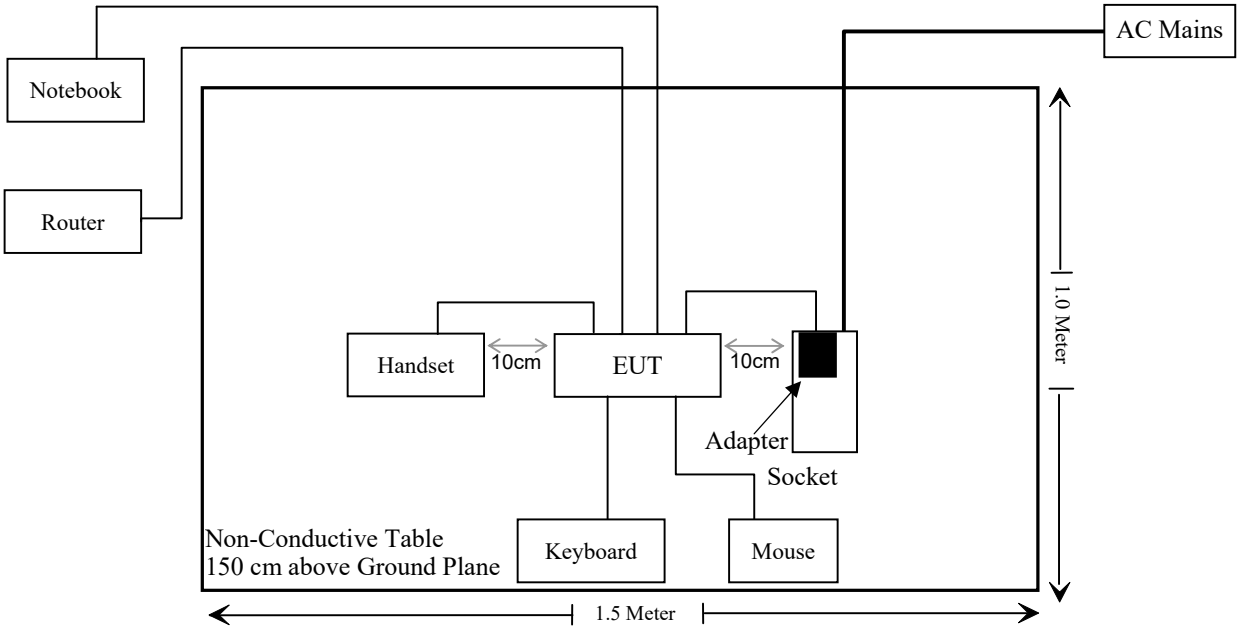
For radiated emission: (below 1GHz-Adapter)



For radiated emission: (below 1GHz-POE)



For radiated emission: (above 1GHz)



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§2.1091	Maximum Permissible Exposure (MPE)	Compliant
§15.203	Antenna Requirement	Compliant
§15.407(b)(9)& §15.207(a)	Conducted Emissions	Compliant
§15.205& §15.209 &§15.407(b)	Undesirable Emission& Restricted Bands	Compliant
§15.407(a) (e)	26 dB Emission Bandwidth & 6dB Bandwidth	Compliant
§15.407(a)	Conducted Transmitter Output Power	Compliant
§15.407 (a)	Power Spectral Density	Compliant
§15.407 (h)	Transmit Power Control (TPC)	Not Applicable
§15.407 (h)	Dynamic Frequency Selection (DFS)	Compliant*

Not Applicable: the EUT has no TPC function which was declarded by the applicant.
Compliant*: Please refer to the DFS report: SZ6210924-49813E-RF-00D.

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Conducted Emissions Test					
Rohde& Schwarz	Test Receiver	ESPI3	100396	2020/12/24	2021/12/23
R & S	L.I.S.N.	ENV216	101314	2020/12/25	2021/12/24
Anritsu Corp	50ΩCoaxial Switch	MP59B	6200506474	2020/12/25	2021/12/24
Unknown	RF Coaxial Cable	N-2m	No.2	2020/12/25	2021/12/24
Conducted Emission Test Software: e3 19821b (V9)					
Radiated Emissions Test					
Rohde& Schwarz	Test Receiver	ESR	101817	2020/12/24	2021/12/23
Rohde&Schwarz	Spectrum Analyzer	FSV40	101495	2020/12/24	2021/12/23
SONOMA INSTRUMENT	Amplifier	310 N	186131	2020/12/25	2021/12/24
A.H. Systems, inc.	Preamplifier	PAM-0118P	531	2021/07/08	2022/07/07
Anritsu Corp	50 Coaxial Switch	MP59B	6100237248	2020/12/25	2021/12/24
Quinstar	Amplifier	QLW-18405536-J0	15964001002	2020/11/28	2021/11/27
Schwarzbeck	Bilog Antenna	VULB9163	9163-323	2020/01/05	2023/01/04
Schwarzbeck	Horn Antenna	BBHA9120D	9120D-1067	2020/01/05	2023/01/04
Schwarzbeck	HORN ANTENNA	BBHA9170	9170-359	2020/01/05	2023/01/04
Unknown	RF Coaxial Cable	N-5m	No.3	2020/12/25	2021/12/24
Unknown	RF Coaxial Cable	N-5m	No.4	2020/12/25	2021/12/24
Unknown	RF Coaxial Cable	N-1m	No.5	2020/12/25	2021/12/24
Unknown	RF Coaxial Cable	N-1m	No.6	2020/12/25	2021/12/24
CD	Band Reject Filter	BRM-5.15/5.35g-45	075	2020/12/25	2021/12/24
CD	Band Reject Filter	BRM-5.47/5.725G-45	075	2020/12/25	2021/12/24
CD	Band Reject Filter	BRM-5.725/5.875G-45	065	2020/12/25	2021/12/24
Radiated Emission Test Software: e3 19821b (V9)					

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
RF Conducted Test					
Rohde & Schwarz	Spectrum Analyzer	FSV-40	101495	2020/12/24	2021/12/23
Tonscend	RF Control Unit	JS0806-2	19G8060182	2021/07/06	2022/07/05

*** Statement of Traceability:** Shenzhen Accurate Technology Co., Ltd. attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

§2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

According to subpart 2.1091 systems operating under the provisions of this section shall be operated in a manner that ensures the public is not exposed to RF energy level in excess of the communication guidelines.

Limits for General Population/Uncontrolled Exposure

Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	**Electric Field Strength (V/m)**	**Magnetic Field Strength (A/m)**	**Power Density (mW/cm^2)**	**Averaging Time (Minutes)**
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*($180/f^2$)	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

f = frequency in MHz
* = Plane-wave equivalent power density

Result

Calculated Formulary:

Predication of MPE limit at a given distance

$$S = \frac{PG}{4\pi R^2}$$

S = power density (in appropriate units, e.g. mW/cm^2)
P = power input to the antenna (in appropriate units, e.g., mW).
G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain.
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

For simultaneously transmit system, the calculated power density should comply with:

$$\sum_i \frac{S_i}{S_{Limit,i}} \le 1$$

Mode	Frequency (MHz)	Antenna Gain		Tune up conducted power		Evaluation Distance (cm)	Power Density (mW/cm^2)	MPE Limit (mW/cm^2)
		(dBi)	(numeric)	(dBm)	(mW)			
BT	2402-2480	2.5	1.78	8.5	7.08	20	0.0025	1
BLE	2402-2480	2.5	1.78	1.0	1.26	20	0.0004	1
2.4GHz Wi-Fi	2412-2462	2.5	1.78	19.5	89.13	20	0.0316	1
5GHz Wi-Fi	5150-5250	3.52	2.25	13.5	22.39	20	0.0100	1
	5250-5350	3.03	2.01	14.0	25.12	20	0.0101	1
	5470-5725	2.59	1.82	14.0	25.12	20	0.0091	1
	5725-5850	1.97	1.57	13.0	19.95	20	0.0062	1

Note: The 2.4G Wi-Fi/BT/BLE can't transmit with the 5G Wi-Fi at the same time, but 2.4G Wi-Fi can transmit with BT/BLE simultaneously.

Simultaneous transmitting consideration (worst case):

The ratio=$MPE_{2.4G\ Wi\text{-}Fi}$/limit+MPE_{BT}/limit=0.0316/1+0.0025/1=0.0341＜1.0

To maintain compliance with the FCC's RF exposure guidelines, place the equipment at least 20cm from nearby persons.

Result: Compliance

FCC §15.203 – ANTENNA REQUIREMENT

Applicable Standard

According to § 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the user of a standard antenna jack or electrical connector is prohibited. The structure and application of the EUT were analyzed to determine compliance with section §15.203 of the rules. §15.203 state that the subject device must meet the following criteria:

a. Antenna must be permanently attached to the unit.
b. Antenna must use a unique type of connector to attach to the EUT.

Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.

And according to FCC 47 CFR section 15.407 (a), if the transmitting antennas of directional gain greater than 6dBi are used, the transmit power and power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Antenna Connector Construction

The EUT has one internal Antenna arrangement, which was permanently attached and the antenna gain is 3.52dBi for 5150-5250MHz , 3.03dBi for 5250-5350MHz, 2.59dBi for 5470-5725MHz, 1.97dBi for 5725-5850MHz, fulfill the requirement of this section. Please refer to the EUT photos.

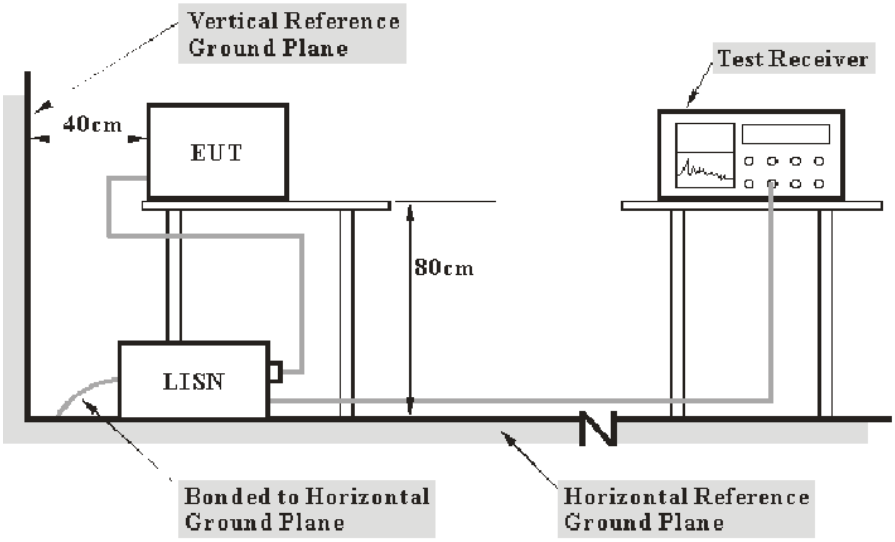
Result: Compliant.

FCC §15.407 (b) (6) §15.207 (a) – CONDUCTED EMISSIONS

Applicable Standard

FCC §15.207, §15.407(b) (6)

EUT Setup



Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207 limits.

The spacing between the peripherals was 10 cm.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

Test Procedure

During the conducted emission test, the adapter was connected to the LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and Average detection mode.

Transd Factor & Margin Calculation

The Transd factor is calculated by adding LISN VDF (Voltage Division Factor), Cable Loss. The basic equation is as follows:

Transd Factor = LISN VDF + Cable Loss

The "**Over Limit**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a over limit of -7 dB means the emission is 7 dB below the limit. The equation for margin calculation is as follows:

Over Limit = Result – Limit
Result= reading level+ Transd Factor

Test Data

Environmental Conditions

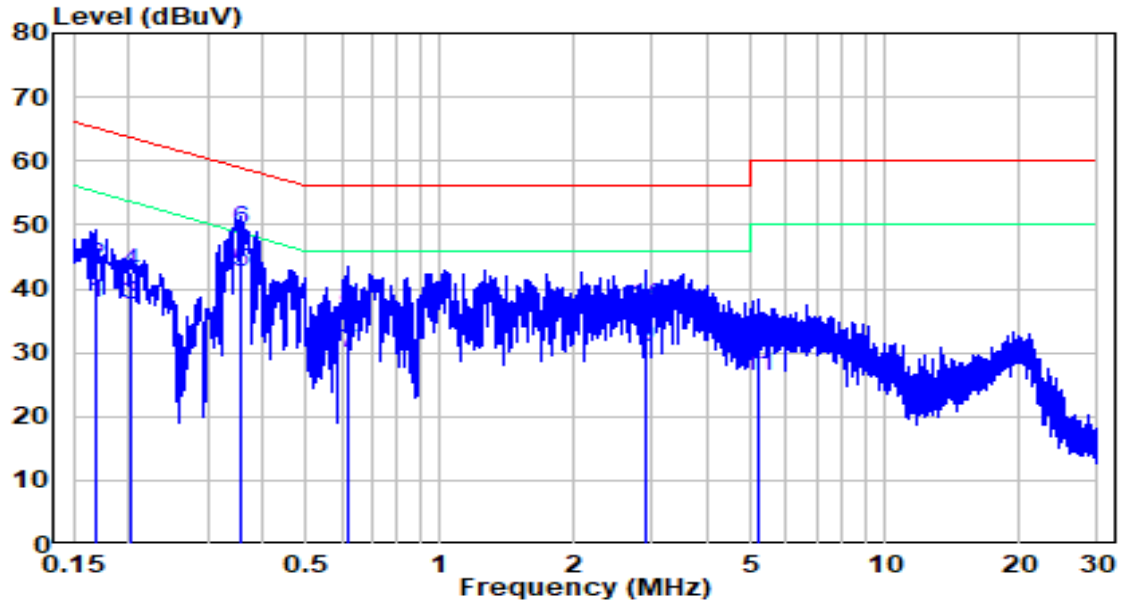
Temperature:	25 ℃
Relative Humidity:	48%
ATM Pressure:	101.0 kPa

The testing was performed by Bin Deng on 2021-10-27.

EUT operation mode: Transmitting (worst case is 802.11 a mode, 5700MHz)

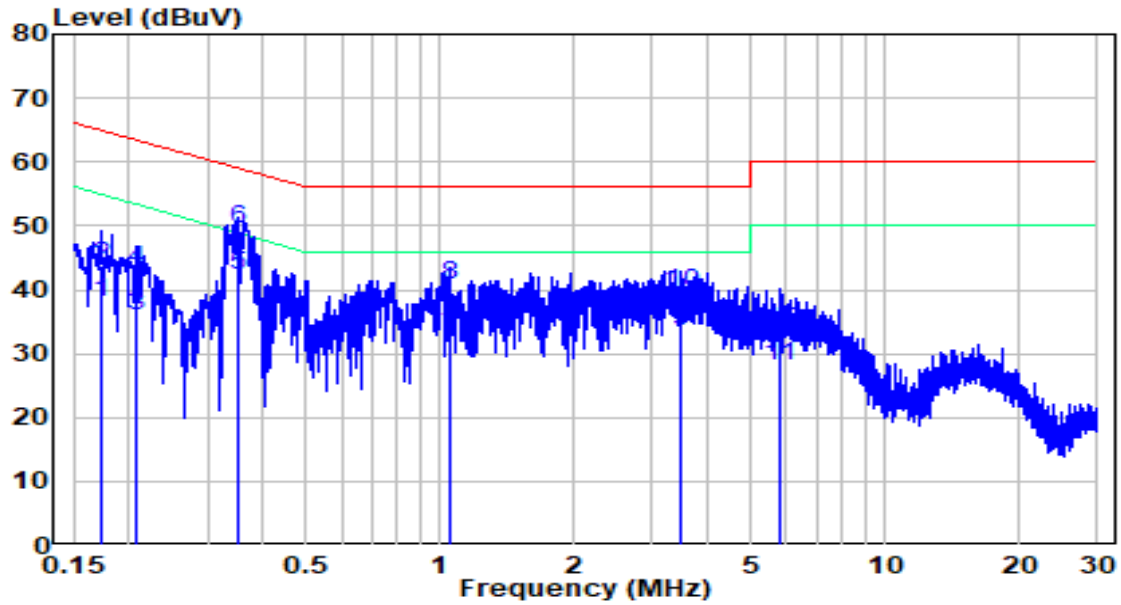
Powered by Adapter:

AC 120V/60 Hz, Line:



No.	Frequency	Reading	Correct	Result	Limit	Over Limit	Remark	Phase
	(MHz)	(dBuV)	Factor(dB)	(dBuV)	(dBuV)	(dB)		
1	0.169	27.90	9.86	37.76	55.01	-17.25	Average	Line
2	0.169	33.66	9.86	43.52	65.01	-21.49	QP	Line
3	0.201	27.68	9.80	37.48	53.59	-16.11	Average	Line
4	0.201	32.70	9.80	42.50	63.59	-21.09	QP	Line
5	0.356	32.83	9.80	42.63	48.81	-6.18	Average	Line
6	0.356	39.40	9.80	49.21	58.81	-9.60	QP	Line
7	0.621	20.04	9.81	29.85	46.00	-16.15	Average	Line
8	0.621	26.91	9.81	36.72	56.00	-19.28	QP	Line
9	2.913	20.94	9.93	30.87	46.00	-15.13	Average	Line
10	2.913	27.05	9.93	36.98	56.00	-19.02	QP	Line
11	5.190	16.22	10.00	26.22	50.00	-23.78	Average	Line
12	5.190	22.08	10.00	32.07	60.00	-27.93	QP	Line

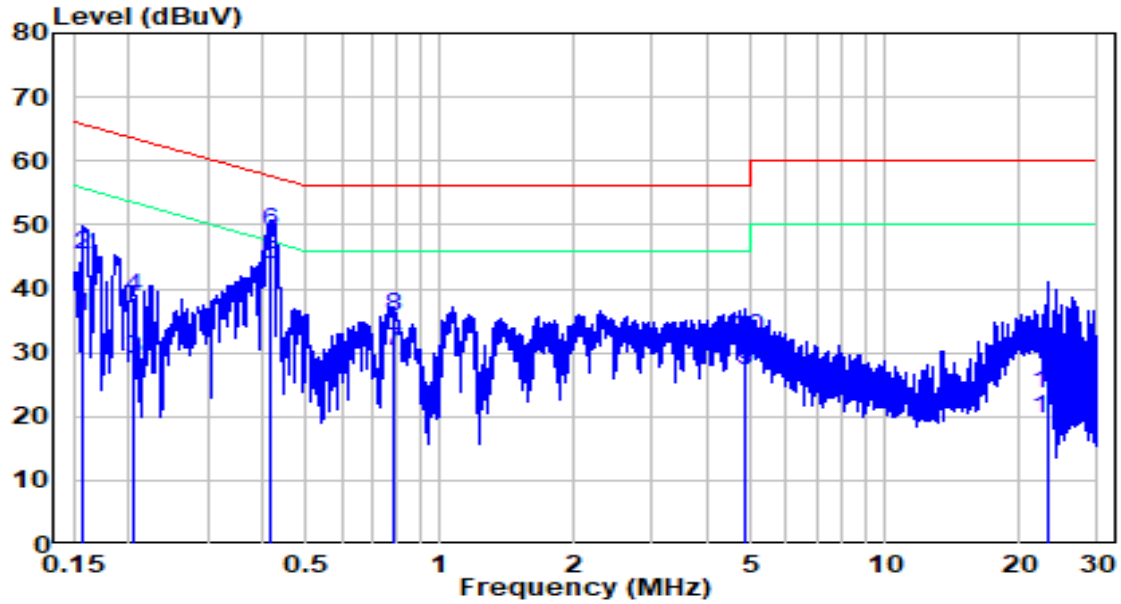
AC 120V/60 Hz, Neutral:



No.	Frequency	Reading	Correct	Result	Limit	Over Limit	Remark	Phase
	(MHz)	(dBuV)	Factor(dB)	(dBuV)	(dBuV)	(dB)		
1	0.172	27.95	9.95	37.90	54.86	-16.96	Average	Neutral
2	0.172	33.88	9.95	43.83	64.86	-21.03	QP	Neutral
3	0.209	25.98	10.00	35.97	53.25	-17.28	Average	Neutral
4	0.209	33.14	10.00	43.14	63.25	-20.11	QP	Neutral
5	0.352	32.19	9.94	42.13	48.91	-6.78	Average	Neutral
6	0.352	39.69	9.94	49.63	58.91	-9.28	QP	Neutral
7	1.049	22.76	9.91	32.67	46.00	-13.33	Average	Neutral
8	1.049	30.86	9.91	40.77	56.00	-15.23	QP	Neutral
9	3.472	23.44	10.01	33.46	46.00	-12.54	Average	Neutral
10	3.472	29.40	10.01	39.42	56.00	-16.58	QP	Neutral
11	5.770	18.03	10.06	28.09	50.00	-21.91	Average	Neutral
12	5.770	23.60	10.06	33.66	60.00	-26.34	QP	Neutral

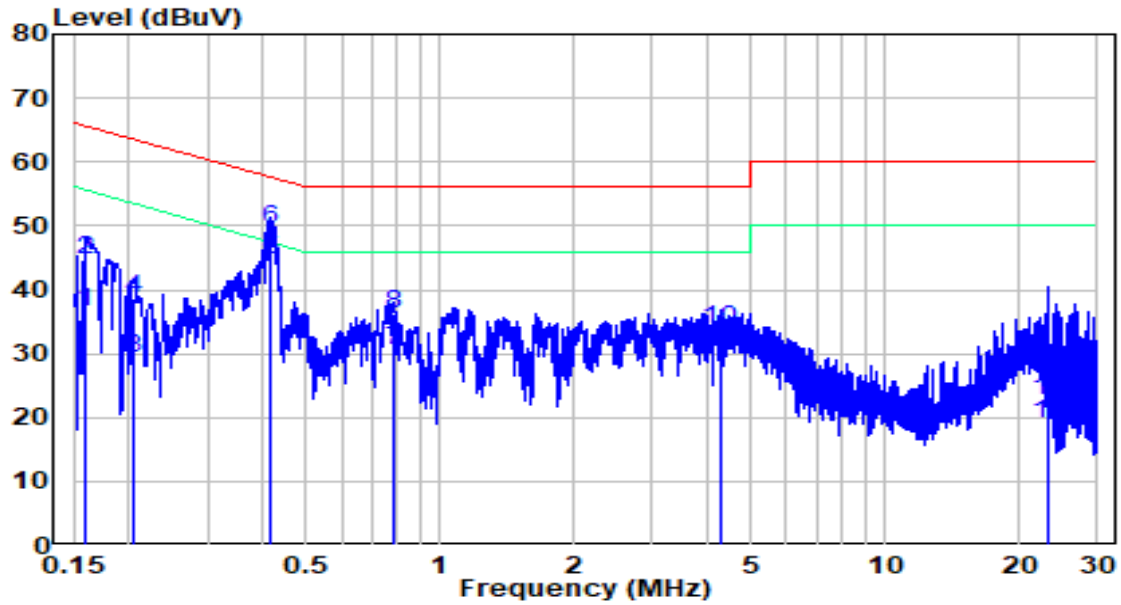
Powered by POE:

AC 120V/60 Hz, Line:



No.	Frequency	Reading	Correct	Result	Limit	Over Limit	Remark	Phase
	(MHz)	(dBuV)	Factor(dB)	(dBuV)	(dBuV)	(dB)		
1	0.158	25.73	9.88	35.62	55.57	-19.95	Average	Line
2	0.158	35.41	9.88	45.29	65.57	-20.28	QP	Line
3	0.205	19.06	9.80	28.86	53.40	-24.54	Average	Line
4	0.205	28.72	9.80	38.52	63.40	-24.88	QP	Line
5	0.416	34.12	9.80	43.92	47.52	-3.60	Average	Line
6	0.416	39.22	9.80	49.02	57.52	-8.50	QP	Line
7	0.781	20.35	9.81	30.16	46.00	-15.84	Average	Line
8	0.781	25.87	9.81	35.67	56.00	-20.33	QP	Line
9	4.835	17.31	9.98	27.30	46.00	-18.70	Average	Line
10	4.835	22.32	9.98	32.30	56.00	-23.70	QP	Line
11	23.140	9.45	10.30	19.75	50.00	-30.25	Average	Line
12	23.140	13.26	10.30	23.57	60.00	-36.43	QP	Line

AC 120V/60 Hz, Neutral:



No.	Frequency	Reading	Correct	Result	Limit	Over Limit	Remark	Phase
	(MHz)	(dBuV)	Factor(dB)	(dBuV)	(dBuV)	(dB)		
1	0.159	26.46	9.92	36.38	55.49	-19.11	Average	Neutral
2	0.159	34.62	9.92	44.54	65.49	-20.95	QP	Neutral
3	0.204	19.26	10.00	29.26	53.46	-24.20	Average	Neutral
4	0.204	28.72	10.00	38.72	63.46	-24.74	QP	Neutral
5	0.416	34.68	9.92	44.60	47.53	-2.93	Average	Neutral
6	0.416	39.64	9.92	49.57	57.53	-7.96	QP	Neutral
7	0.784	20.45	9.91	30.36	46.00	-15.64	Average	Neutral
8	0.784	26.38	9.91	36.29	56.00	-19.71	QP	Neutral
9	4.247	20.41	10.04	30.45	46.00	-15.55	Average	Neutral
10	4.247	23.78	10.04	33.82	56.00	-22.18	QP	Neutral
11	23.140	8.70	10.27	18.97	50.00	-31.03	Average	Neutral
12	23.140	12.34	10.27	22.61	60.00	-37.39	QP	Neutral

§15.205 & §15.209 & §15.407(B)– UNDESIRABLE EMISSION

Applicable Standard

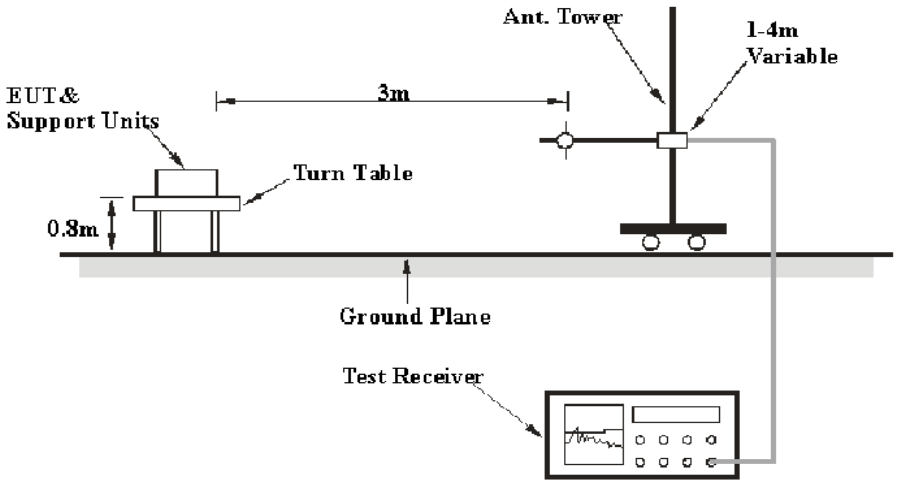
FCC §15.407 (b); §15.209; §15.205;

(b) Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:
(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
(2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
(3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
(4) For transmitters operating in the 5.725-5.85 GHz band:
(i) All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

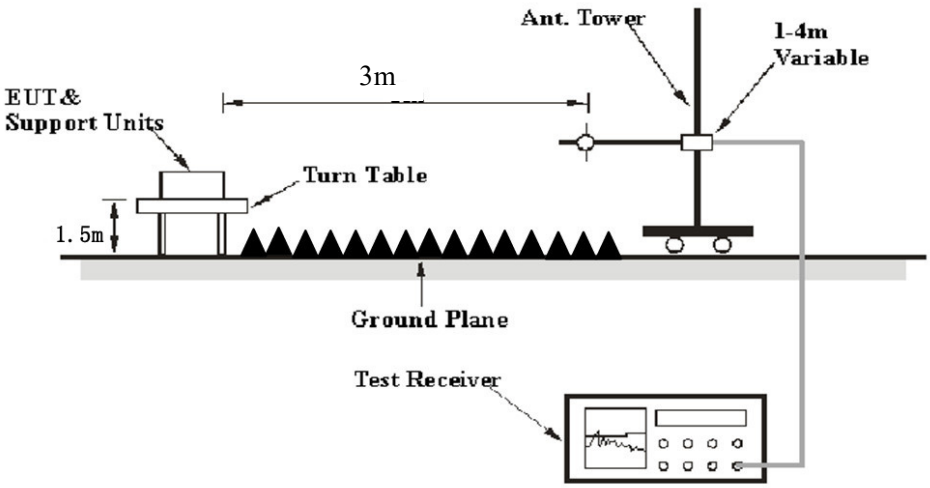
Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209.

EUT Setup

Below 1 GHz:



Above 1 GHz:



The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC 15.209 and FCC 15.407 limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 40 GHz.

During the radiated emission test, the EMI test receiver & Spectrum Analyzer Setup were set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Measurement
30 MHz – 1000 MHz	100 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1 MHz	3 MHz	/	PK
	1MHz	10 Hz Note 1	/	Average
	1MHz	＞1/T Note 2	/	Average

Note 1: when duty cycle is no less than 98%
Note 2: when duty cycle is less than 98%

Test Procedure

Radiated Spurious Emission

During the radiated emission test, the adapter was connected to the AC floor outlet.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all the installation combinations.

Data was recorded in Quasi-peak detection mode for frequency range of 30 MHz-1GHz, peak and Average detection modes for frequencies above 1GHz.

Corrected Factor & Margin Calculation

The Corrected Factor is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain. The basic equation is as follows:

Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain

The "**Over limit or Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a over limit or margin of -7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

Over limit/Margin = Result/Corrected Amplitude-Limit
Result/Corrected Amplitude = Reading + Corrected Factor

Test Data

Environmental Conditions

Temperature:	25~28.1℃
Relative Humidity:	44~48 %
ATM Pressure:	101.0~101.1 kPa

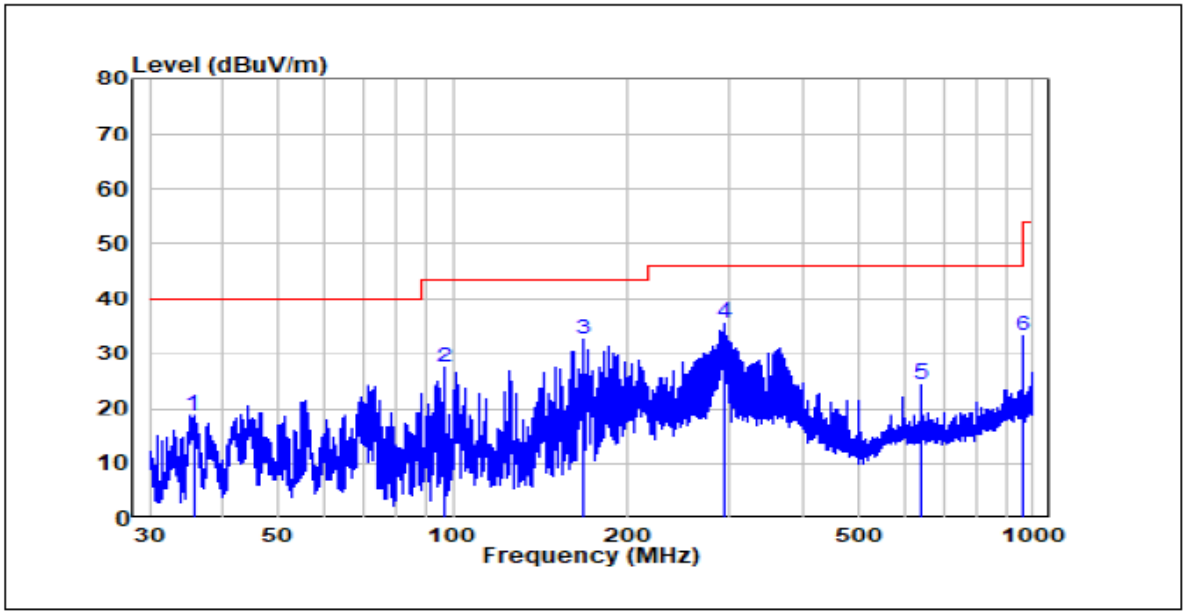
The testing was performed by Chao Mo on 2021-10-27 for below 1GHz and Caro Hu on 2021-11-22and 2021-11-23 for above 1GHz.

EUT operation mode: Transmitting

30 MHz – 1 GHz: *(worst case is 802.11 A mode, 5700MHz)*

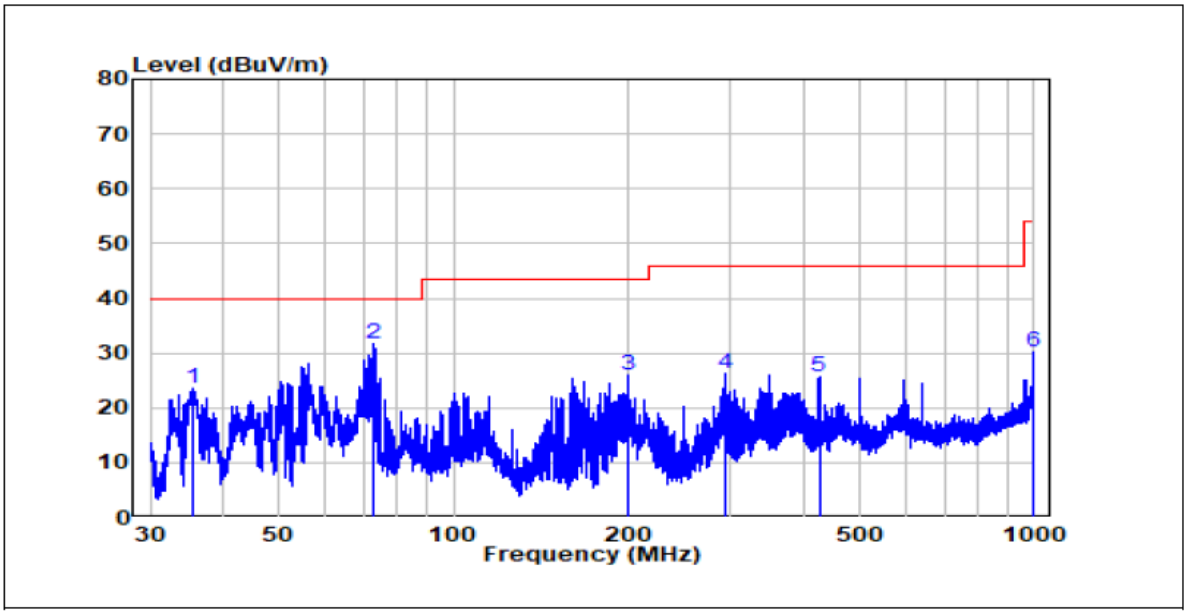
Powered by Adapter:

Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Over Limit	Remark	Phase
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)		
1	35.686	38.03	-19.34	18.69	40.00	-21.31	Peak	HORIZONTAL
2	96.605	47.38	-19.87	27.51	43.50	-15.99	Peak	HORIZONTAL
3	167.677	53.66	-21.16	32.50	43.50	-11.00	Peak	HORIZONTAL
4	294.759	52.44	-16.90	35.55	46.00	-10.45	Peak	HORIZONTAL
5	639.209	35.72	-11.23	24.48	46.00	-21.52	Peak	HORIZONTAL
6	960.056	41.11	-7.99	33.12	54.00	-20.88	Peak	HORIZONTAL

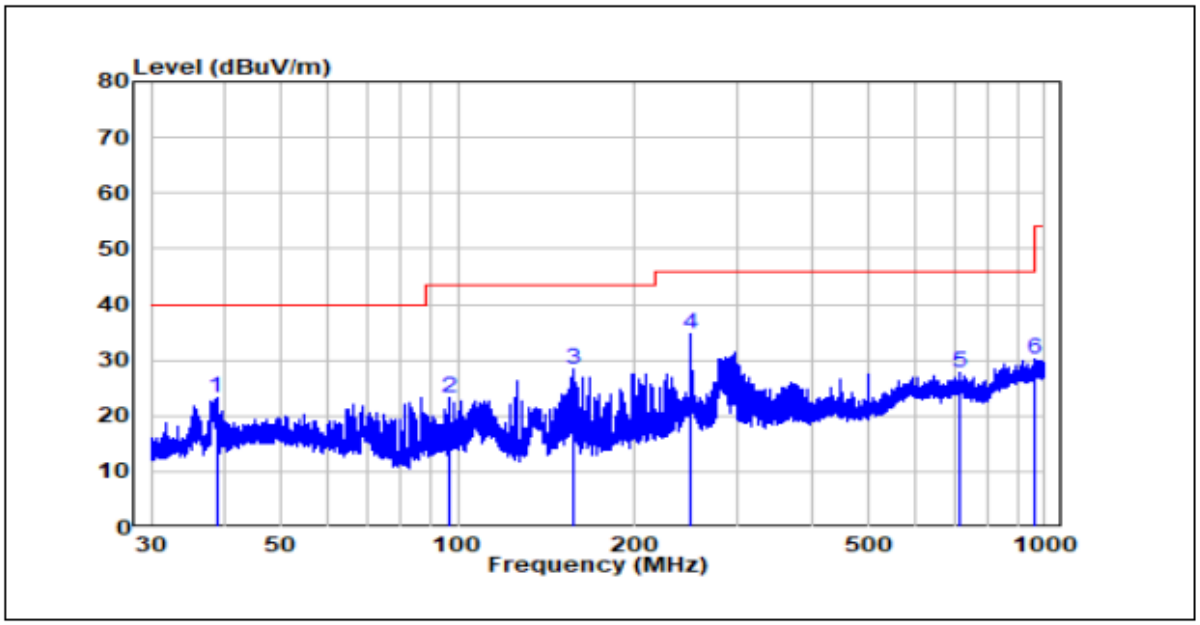
Vertical



No.	Frequency	Reading	Correct	Result	Limit	Over Limit	Remark	Phase
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)		
1	35.562	42.82	-19.36	23.46	40.00	-16.54	Peak	VERTICAL
2	72.592	53.56	-21.81	31.76	40.00	-8.24	Peak	VERTICAL
3	199.111	45.27	-19.16	26.11	43.50	-17.39	Peak	VERTICAL
4	293.985	43.36	-16.94	26.41	46.00	-19.59	Peak	VERTICAL
5	426.147	40.20	-14.39	25.81	46.00	-20.19	Peak	VERTICAL
6	998.248	37.67	-7.38	30.30	54.00	-23.70	Peak	VERTICAL

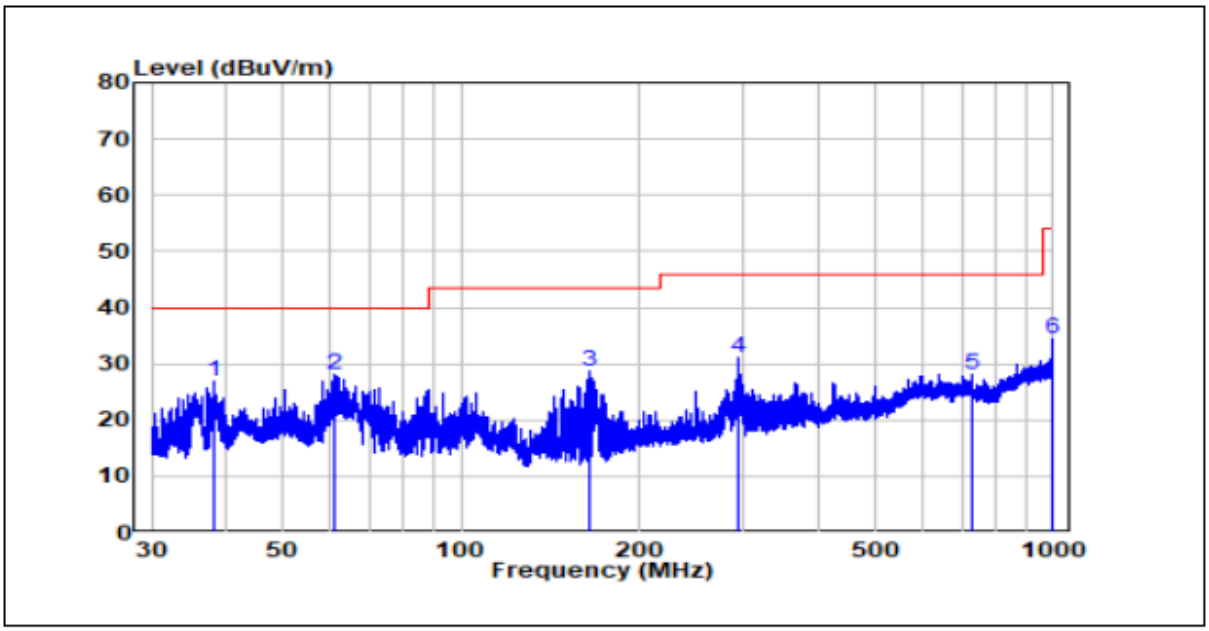
Powered by POE:

Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Over Limit	Remark	Phase
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)		
1	38.752	42.19	-18.85	23.35	40.00	-16.65	Peak	HORIZONTAL
2	96.267	43.28	-19.94	23.34	43.50	-20.16	Peak	HORIZONTAL
3	157.766	50.01	-21.73	28.27	43.50	-15.23	Peak	HORIZONTAL
4	249.972	53.11	-18.53	34.58	46.00	-11.42	Peak	HORIZONTAL
5	714.800	39.03	-11.36	27.67	46.00	-18.33	Peak	HORIZONTAL
6	960.056	38.11	-7.99	30.12	54.00	-23.88	Peak	HORIZONTAL

Vertical



No.	Frequency	Reading	Correct	Result	Limit	Over Limit	Remark	Phase
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)		
1	38.346	45.75	-18.91	26.84	40.00	-13.16	Peak	VERTICAL
2	60.944	47.71	-19.69	28.03	40.00	-11.97	Peak	VERTICAL
3	165.125	50.18	-21.36	28.81	43.50	-14.69	Peak	VERTICAL
4	294.114	48.07	-16.94	31.13	46.00	-14.87	Peak	VERTICAL
5	727.124	39.55	-11.33	28.21	46.00	-17.79	Peak	VERTICAL
6	999.124	41.69	-7.36	34.33	54.00	-19.67	Peak	VERTICAL

1GHz-40GHz:

5150-5250 MHz:

Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.407	
	Reading (dBμV)	PK/QP/Ave.	Angle Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11a									
5180 MHz									
4500	64.12	PK	23	2.0	H	-4.72	59.40	74	-14.6
4500	49.18	Ave.	23	2.0	H	-4.72	44.46	54	-9.54
4500	63.90	PK	4	2.0	V	-4.72	59.18	74	-14.82
4500	49.69	Ave.	4	2.0	V	-4.72	44.97	54	-9.03
5150	66.93	PK	58	1.8	H	-2.73	64.20	74	-9.8
5150	49.65	Ave.	58	1.8	H	-2.73	46.92	54	-7.08
5150	64.20	PK	288	1.5	V	-2.73	61.47	74	-12.53
5150	49.81	Ave.	288	1.5	V	-2.73	47.08	54	-6.92
10360	44.82	PK	194	1.8	H	8.12	52.94	68.2	-15.26
10360	44.89	PK	206	1.8	V	8.12	53.01	68.2	-15.19
5200 MHz									
10400	44.3	PK	350	1.5	H	8.24	52.54	68.2	-15.66
10400	44.82	PK	185	1.8	V	8.24	53.06	68.2	-15.14
5240 MHz									
5350	64.11	PK	187	1.6	H	-2.33	61.78	74	-12.22
5350	49.66	Ave.	187	1.6	H	-2.33	47.33	54	-6.67
5350	63.76	PK	41	2.0	V	-2.33	61.43	74	-12.57
5350	49.65	Ave.	41	2.0	V	-2.33	47.32	54	-6.68
5460	64.07	PK	129	1.7	H	-2.26	61.81	74	-12.19
5460	50.54	Ave.	129	1.7	H	-2.26	48.28	54	-5.72
5460	64.27	PK	16	1.9	V	-2.26	62.01	74	-11.99
5460	50.45	Ave.	16	1.9	V	-2.26	48.19	54	-5.81
10480	43.16	PK	157	1.8	H	8.56	51.72	68.2	-16.48
10480	44.66	PK	45	2.1	V	8.56	53.22	68.2	-14.98

Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part15.407	
	Reading (dBμV)	PK/QP/Ave.	Angle Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11n20									
5180 MHz									
4500	63.52	PK	295	2.0	H	-4.72	58.80	74	-15.20
4500	50.04	Ave.	295	2.0	H	-4.72	45.32	54	-8.68
4500	63.73	PK	220	1.7	V	-4.72	59.01	74	-14.99
4500	49.93	Ave.	220	1.7	V	-4.72	45.21	54	-8.79
5150	65.75	PK	31	1.5	H	-2.73	63.02	74	-10.98
5150	50.34	Ave.	31	1.5	H	-2.73	47.61	54	-6.39
5150	63.80	PK	181	1.6	V	-2.73	61.07	74	-12.93
5150	50.25	Ave.	181	1.6	V	-2.73	47.52	54	-6.48
10360	43.98	PK	147	1.9	H	8.12	52.10	68.2	-16.10
10360	44.52	PK	197	1.6	V	8.12	52.64	68.2	-15.56
5200 MHz									
10400	44.04	PK	145	1.9	H	8.24	52.28	68.2	-15.92
10400	44.21	PK	299	2.1	V	8.24	52.45	68.2	-15.75
5240 MHz									
5350	63.84	PK	40	2.0	H	-2.33	61.51	74	-12.49
5350	50.09	Ave.	40	2.0	H	-2.33	47.76	54	-6.24
5350	64.41	PK	49	1.5	V	-2.33	62.08	74	-11.92
5350	50.10	Ave.	49	1.5	V	-2.33	47.77	54	-6.23
5460	64.79	PK	97	2.1	H	-2.26	62.53	74	-11.47
5460	50.85	Ave.	97	2.1	H	-2.26	48.59	54	-5.41
5460	64.77	PK	323	1.9	V	-2.26	62.51	74	-11.49
5460	50.82	Ave.	323	1.9	V	-2.26	48.56	54	-5.44
10480	43.34	PK	44	1.7	H	8.56	51.90	68.2	-16.30
10480	44.17	PK	159	1.7	V	8.56	52.73	68.2	-15.47

Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part15.407	
	Reading (dBμV)	PK/QP/Ave.	Angle Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11n40									
5190 MHz									
4500	63.33	PK	221	1.7	H	-4.72	58.61	74	-15.39
4500	50.43	Ave.	221	1.7	H	-4.72	45.71	54	-8.29
4500	63.59	PK	101	1.8	V	-4.72	58.87	74	-15.13
4500	50.46	Ave.	101	1.8	V	-4.72	45.74	54	-8.26
5150	68.95	PK	297	1.9	H	-2.73	66.22	74	-7.78
5150	54.16	Ave.	297	1.9	H	-2.73	51.43	54	-2.57
5150	65.75	PK	86	2.1	V	-2.73	63.02	74	-10.98
5150	51.81	Ave.	86	2.1	V	-2.73	49.08	54	-4.92
10380	44.48	PK	276	1.7	H	8.18	52.66	68.2	-15.54
10380	44.36	PK	133	1.8	V	8.18	52.54	68.2	-15.66
5230 MHz									
5350	63.39	PK	58	1.7	H	-2.33	61.06	74	-12.94
5350	50.56	Ave.	58	1.7	H	-2.33	48.23	54	-5.77
5350	63.72	PK	71	1.7	V	-2.33	61.39	74	-12.61
5350	50.29	Ave.	71	1.7	V	-2.33	47.96	54	-6.04
5460	64.19	PK	326	1.6	H	-2.26	61.93	74	-12.07
5460	51.23	Ave.	326	1.6	H	-2.26	48.97	54	-5.03
5460	64.35	PK	215	1.6	V	-2.26	62.09	74	-11.91
5460	51.26	Ave.	215	1.6	V	-2.26	49.00	54	-5.00
10460	43.25	PK	228	1.8	H	8.47	51.72	68.2	-16.48
10460	43.73	PK	239	1.5	V	8.47	52.20	68.2	-16.00

Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part15.407	
	Reading (dBμV)	PK/QP/Ave.	Angle Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11ac20									
5180 MHz									
4500	63.47	PK	302	1.8	H	-4.72	58.75	74	-15.25
4500	50.04	Ave.	302	1.8	H	-4.72	45.32	54	-8.68
4500	63.81	PK	280	1.8	V	-4.72	59.09	74	-14.91
4500	50.02	Ave.	280	1.8	V	-4.72	45.30	54	-8.70
5150	64.87	PK	213	1.9	H	-2.73	62.14	74	-11.86
5150	50.27	Ave.	213	1.9	H	-2.73	47.54	54	-6.46
5150	63.89	PK	307	2.0	V	-2.73	61.16	74	-12.84
5150	50.06	Ave.	307	2.0	V	-2.73	47.33	54	-6.67
10360	43.82	PK	307	1.9	H	8.12	51.94	68.2	-16.26
10360	44.57	PK	209	2.1	V	8.12	52.69	68.2	-15.51
5200 MHz									
10400	44.13	PK	226	2.1	H	8.24	52.37	68.2	-15.83
10400	44.16	PK	178	1.7	V	8.24	52.40	68.2	-15.80
5240 MHz									
5350	63.88	PK	202	1.6	H	-2.33	61.55	74	-12.45
5350	50.06	Ave.	202	1.6	H	-2.33	47.73	54	-6.27
5350	63.87	PK	264	2.1	V	-2.33	61.54	74	-12.46
5350	49.95	Ave.	264	2.1	V	-2.33	47.62	54	-6.38
5460	64.55	PK	163	1.8	H	-2.26	62.29	74	-11.71
5460	50.72	Ave.	163	1.8	H	-2.26	48.46	54	-5.54
5460	64.93	PK	180	2.1	V	-2.26	62.67	74	-11.33
5460	50.82	Ave.	180	2.1	V	-2.26	48.56	54	-5.44
10480	43.87	PK	62	2.1	H	8.56	52.43	68.2	-15.77
10480	44.45	PK	305	1.7	V	8.56	53.01	68.2	-15.19

Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part15.407	
	Reading (dBμV)	PK/QP/Ave.	Angle Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11ac40									
5190 MHz									
4500	63.74	PK	351	1.5	H	-4.72	59.02	74	-14.98
4500	50.52	Ave.	351	1.5	H	-4.72	45.80	54	-8.20
4500	63.51	PK	111	2.1	V	-4.72	58.79	74	-15.21
4500	50.53	Ave.	111	2.1	V	-4.72	45.81	54	-8.19
5150	69.87	PK	87	2.0	H	-2.73	67.14	74	-6.86
5150	54.08	Ave.	87	2.0	H	-2.73	51.35	54	-2.65
5150	66.20	PK	158	1.7	V	-2.73	63.47	74	-10.53
5150	52.11	Ave.	158	1.7	V	-2.73	49.38	54	-4.62
10380	44.39	PK	162	1.8	H	8.18	52.57	68.2	-15.63
10380	44.75	PK	30	1.9	V	8.18	52.93	68.2	-15.27
5230 MHz									
5350	63.85	PK	166	1.9	H	-2.33	61.52	74	-12.48
5350	50.34	Ave.	166	1.9	H	-2.33	48.01	54	-5.99
5350	63.74	PK	309	1.7	V	-2.33	61.41	74	-12.59
5350	50.45	Ave.	309	1.7	V	-2.33	48.12	54	-5.88
5460	64.97	PK	136	2.0	H	-2.26	62.71	74	-11.29
5460	51.32	Ave.	136	2.0	H	-2.26	49.06	54	-4.94
5460	64.19	PK	318	2.0	V	-2.26	61.93	74	-12.07
5460	51.17	Ave.	318	2.0	V	-2.26	48.91	54	-5.09
10460	43.34	PK	146	1.7	H	8.47	51.81	68.2	-16.39
10460	44.75	PK	129	1.8	V	8.47	53.22	68.2	-14.98

Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part15.407	
	Reading (dBμV)	PK/QP/Ave.	Angle Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11ac80									
5210 MHz									
4500	64.07	PK	107	1.7	H	-4.72	59.35	74	-14.65
4500	50.95	Ave.	107	1.7	H	-4.72	46.23	54	-7.77
4500	63.93	PK	79	1.9	V	-4.72	59.21	74	-14.79
4500	50.81	Ave.	79	1.9	V	-4.72	46.09	54	-7.91
5150	69.57	PK	122	2.1	H	-2.73	66.84	74	-7.16
5150	54.42	Ave.	122	2.1	H	-2.73	51.69	54	-2.31
5150	66.68	PK	162	2.1	V	-2.73	63.95	74	-10.05
5150	52.25	Ave.	162	2.1	V	-2.73	49.52	54	-4.48
5350	63.39	PK	291	1.8	H	-2.33	61.06	74	-12.94
5350	50.83	Ave.	291	1.8	H	-2.33	48.50	54	-5.50
5350	63.33	PK	171	1.5	V	-2.33	61.00	74	-13.00
5350	50.71	Ave.	171	1.5	V	-2.33	48.38	54	-5.62
5460	64.27	PK	278	1.8	H	-2.26	62.01	74	-11.99
5460	51.57	Ave.	278	1.8	H	-2.26	49.31	54	-4.69
5460	64.27	PK	278	1.8	V	-2.26	62.01	74	-11.99
5460	51.77	Ave.	278	1.8	V	-2.26	49.51	54	-4.49
10420	44.65	PK	289	1.6	H	8.32	52.97	68.2	-15.23
10420	43.93	PK	207	1.7	V	8.32	52.25	68.2	-15.95

5250-5350 MHz:

Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part15.407	
	Reading (dBμV)	Detector (PK/QP/Ave.)	Angle Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11a									
5260 MHz									
4500	63.66	PK	147	1.8	H	-4.72	58.94	74	-15.06
4500	49.69	Ave.	147	1.8	H	-4.72	44.97	54	-9.03
4500	63.65	PK	28	2.0	V	-4.72	58.93	74	-15.07
4500	49.60	Ave.	28	2.0	V	-4.72	44.88	54	-9.12
5150	63.66	PK	113	1.6	H	-2.73	60.93	74	-13.07
5150	49.85	Ave.	113	1.6	H	-2.73	47.12	54	-6.88
5150	63.40	PK	78	1.6	V	-2.73	60.67	74	-13.33
5150	50.09	Ave.	78	1.6	V	-2.73	47.36	54	-6.64
10520	43.52	PK	317	2.1	H	8.65	52.17	68.2	-16.03
10520	44.45	PK	138	1.6	V	8.65	53.10	68.2	-15.1
5280 MHz									
10560	44.24	PK	223	2.1	H	8.69	52.93	68.2	-15.27
10560	45.43	PK	322	1.9	V	8.69	54.12	68.2	-14.08
5320 MHz									
5350	64.06	PK	61	1.9	H	-2.33	61.73	74	-12.27
5350	50.60	Ave.	61	1.9	H	-2.33	48.27	54	-5.73
5350	64.16	PK	104	1.9	V	-2.33	61.83	74	-12.17
5350	50.59	Ave.	104	1.9	V	-2.33	48.26	54	-5.74
5460	64.02	PK	189	1.8	H	-2.26	61.76	74	-12.24
5460	50.26	Ave.	189	1.8	H	-2.26	48.00	54	-6.00
5460	64.92	PK	286	2.1	V	-2.26	62.66	74	-11.34
5460	50.37	Ave.	286	2.1	V	-2.26	48.11	54	-5.89
10640	44.62	PK	264	1.5	H	8.92	53.54	74	-20.46
10640	29.70	Ave.	264	1.5	H	8.92	38.62	54	-15.38
10640	45.48	PK	25	1.5	V	8.92	54.40	74	-19.60
10640	30.99	Ave.	25	1.5	V	8.92	39.91	54	-14.09

Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part15.407	
	Reading (dBμV)	PK/QP/Ave.	Angle Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11n20									
5260 MHz									
4500	63.51	PK	42	1.5	H	-4.72	58.79	74	-15.21
4500	50.02	Ave.	42	1.5	H	-4.72	45.30	54	-8.7
4500	63.42	PK	66	1.9	V	-4.72	58.70	74	-15.3
4500	49.89	Ave.	66	1.9	V	-4.72	45.17	54	-8.83
5150	63.41	PK	103	1.9	H	-2.73	60.68	74	-13.32
5150	50.01	Ave.	103	1.9	H	-2.73	47.28	54	-6.72
5150	62.64	PK	324	1.7	V	-2.73	59.91	74	-14.09
5150	50.39	Ave.	324	1.7	V	-2.73	47.66	54	-6.34
10520	43.51	PK	102	2.1	H	8.65	52.16	68.2	-16.04
10520	43.41	PK	195	1.7	V	8.65	52.06	68.2	-16.14
5280 MHz									
10560	44.11	PK	266	1.5	H	8.69	52.80	68.2	-15.40
10560	44.44	PK	283	1.6	V	8.69	53.13	68.2	-15.07
5320 MHz									
5350	64.06	PK	291	1.7	H	-2.33	61.64	74	-12.36
5350	50.60	Ave.	291	1.7	H	-2.33	48.70	54	-5.30
5350	64.16	PK	6	1.7	V	-2.33	61.62	74	-12.38
5350	50.59	Ave.	6	1.7	V	-2.33	48.54	54	-5.46
5460	64.02	PK	21	1.9	H	-2.26	62.02	74	-11.98
5460	50.26	Ave.	21	1.9	H	-2.26	48.32	54	-5.68
5460	64.92	PK	224	1.9	V	-2.26	62.18	74	-11.82
5460	50.37	Ave.	224	1.9	V	-2.26	48.34	54	-5.66
10640	45.48	PK	50	2.0	H	8.92	52.60	74	-21.40
10640	30.99	Ave.	50	2.0	H	8.92	37.06	54	-16.94
10640	44.92	PK	243	1.8	V	8.92	53.84	74	-20.16
10640	30.26	PK	243	1.8	V	8.92	39.18	54	-14.82

Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part15.407	
	Reading (dBμV)	Detector (PK/QP/Ave.)	Angle Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11n40									
5270 MHz									
4500	63.68	PK	61	1.6	H	-4.72	58.96	74	-15.04
4500	50.26	Ave.	61	1.6	H	-4.72	45.54	54	-8.46
4500	64.03	PK	22	1.6	V	-4.72	59.31	74	-14.69
4500	50.45	Ave.	22	1.6	V	-4.72	45.73	54	-8.27
5150	63.01	PK	83	2.0	H	-2.73	60.28	74	-13.72
5150	50.78	Ave.	83	2.0	H	-2.73	48.05	54	-5.95
5150	62.77	PK	160	2.0	V	-2.73	60.04	74	-13.96
5150	50.92	Ave.	160	2.0	V	-2.73	48.19	54	-5.81
10540	43.78	PK	38	1.6	H	8.65	52.43	68.2	-15.77
10540	43.73	PK	107	1.6	V	8.65	52.38	68.2	-15.82
5310 MHz									
5350	73.17	PK	348	1.9	H	-2.33	70.84	74	-3.16
5350	54.29	Ave.	348	1.9	H	-2.33	51.96	54	-2.04
5350	70.95	PK	13	1.8	V	-2.33	68.62	74	-5.38
5350	52.64	Ave.	13	1.8	V	-2.33	50.31	54	-3.69
5460	64.52	PK	210	1.7	H	-2.26	62.26	74	-11.74
5460	51.10	Ave.	210	1.7	H	-2.26	48.84	54	-5.16
5460	64.53	PK	288	1.6	V	-2.26	62.27	74	-11.73
5460	51.15	Ave.	288	1.6	V	-2.26	48.89	54	-5.11
10620	44.34	PK	207	2.0	H	8.89	53.23	74	-20.77
10620	44.35	PK	226	2.0	V	8.89	53.24	74	-20.76

Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part15.407	
	Reading (dBμV)	PK/QP/Ave.	Angle Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11ac20									
5260 MHz									
4500	63.48	PK	176	2.0	H	-4.72	58.76	74	-15.24
4500	49.83	Ave.	176	2.0	H	-4.72	45.11	54	-8.89
4500	63.55	PK	110	2.1	V	-4.72	58.83	74	-15.17
4500	49.99	Ave.	110	2.1	V	-4.72	45.27	54	-8.73
5150	62.98	PK	64	1.6	H	-2.73	60.25	74	-13.75
5150	50.43	Ave.	64	1.6	H	-2.73	47.70	54	-6.3
5150	62.72	PK	2	1.6	V	-2.73	59.99	74	-14.01
5150	50.30	Ave.	2	1.6	V	-2.73	47.57	54	-6.43
10520	43.19	PK	174	2.0	H	8.65	51.84	68.2	-16.36
10520	44.22	PK	27	1.8	V	8.65	52.87	68.2	-15.33
5280 MHz									
10560	44.10	PK	354	2	H	8.69	52.79	68.2	-15.41
10560	44.54	PK	341	1.5	V	8.69	53.23	68.2	-14.97
5320 MHz									
5350	63.91	PK	20	1.8	H	-2.33	61.58	74	-12.42
5350	50.97	Ave.	20	1.8	H	-2.33	48.64	54	-5.36
5350	64.15	PK	0	1.6	V	-2.33	61.82	74	-12.18
5350	50.89	Ave.	0	1.6	V	-2.33	48.56	54	-5.44
5460	64.69	PK	295	2.0	H	-2.26	62.43	74	-11.57
5460	50.74	Ave.	295	2.0	H	-2.26	48.48	54	-5.52
5460	64.31	PK	109	1.6	V	-2.26	62.05	74	-11.95
5460	50.64	Ave.	109	1.6	V	-2.26	48.38	54	-5.62
10640	44.30	PK	298	1.6	H	8.92	53.22	74	-20.78
10640	28.26	PK	298	1.6	H	8.92	37.18	54	-16.82
10640	45.38	PK	29	1.8	V	8.92	54.30	74	-19.70
10640	30.71	PK	29	1.8	V	8.92	39.63	54	-14.37

Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part15.407	
	Reading (dBμV)	Detector (PK/QP/Ave.)	Angle Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11ac40									
5270 MHz									
4500	63.11	PK	301	1.6	H	-4.72	58.39	74	-15.61
4500	50.33	Ave.	301	1.6	H	-4.72	45.61	54	-8.39
4500	64.20	PK	155	1.8	V	-4.72	59.48	74	-14.52
4500	50.25	Ave.	155	1.8	V	-4.72	45.53	54	-8.47
5150	62.77	PK	285	1.7	H	-2.73	60.04	74	-13.96
5150	50.75	Ave.	285	1.7	H	-2.73	48.02	54	-5.98
5150	62.99	PK	146	1.8	V	-2.73	60.26	74	-13.74
5150	50.76	Ave.	146	1.8	V	-2.73	48.03	54	-5.97
10540	43.92	PK	149	1.5	H	8.65	52.57	68.2	-15.63
10540	43.64	PK	143	2.1	V	8.65	52.29	68.2	-15.91
5310 MHz									
5350	70.72	PK	281	2.1	H	-2.33	68.39	74	-5.61
5350	53.94	Ave.	281	2.1	H	-2.33	51.61	54	-2.39
5350	68.85	PK	37	1.8	V	-2.33	66.52	74	-7.48
5350	52.41	Ave.	37	1.8	V	-2.33	50.08	54	-3.92
5460	64.17	PK	214	2.1	H	-2.26	61.91	74	-12.09
5460	51.11	Ave.	214	2.1	H	-2.26	48.85	54	-5.15
5460	64.33	PK	59	1.9	V	-2.26	62.07	74	-11.93
5460	51.27	Ave.	59	1.9	V	-2.26	49.01	54	-4.99
10620	44.41	PK	99	1.7	H	8.89	53.30	74	-20.70
10620	44.60	PK	349	1.9	V	8.89	53.49	74	-20.51

Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part15.407	
	Reading (dBμV)	Detector (PK/QP/Ave.)	Angle Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11ac80									
5290 MHz									
4500	63.20	PK	107	2.1	H	-4.72	58.48	74	-15.52
4500	50.62	Ave.	107	2.1	H	-4.72	45.90	54	-8.10
4500	63.69	PK	315	1.7	V	-4.72	58.97	74	-15.03
4500	50.77	Ave.	315	1.7	V	-4.72	46.05	54	-7.95
5150	63.41	PK	184	1.6	H	-2.73	60.68	74	-13.32
5150	51.22	Ave.	184	1.6	H	-2.73	48.49	54	-5.51
5150	62.77	PK	284	1.9	V	-2.73	60.04	74	-13.96
5150	51.04	Ave.	284	1.9	V	-2.73	48.31	54	-5.69
5350	68.26	PK	291	1.6	H	-2.33	65.93	74	-8.07
5350	53.42	Ave.	291	1.6	H	-2.33	51.09	54	-2.91
5350	66.23	PK	317	2.1	V	-2.33	63.90	74	-10.10
5350	51.75	Ave.	317	2.1	V	-2.33	49.42	54	-4.58
5460	63.86	PK	282	1.8	H	-2.26	61.60	74	-12.40
5460	51.27	Ave.	282	1.8	H	-2.26	49.01	54	-4.99
5460	64.84	PK	282	1.8	V	-2.26	62.58	74	-11.42
5460	51.75	Ave.	282	1.8	V	-2.26	49.49	54	-4.51
10580	44.51	PK	248	1.9	H	8.77	53.28	68.2	-14.92
10580	44.59	PK	63	1.6	V	8.77	53.36	68.2	-14.84

5470-5725MHz:

Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part15.407	
	Reading (dBμV)	Detector (PK/QP/Ave.)	Angle Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11a									
5500 MHz									
5400	70.03	PK	352	1.8	H	-2.29	67.74	74	-6.26
5400	50.19	Ave.	352	1.8	H	-2.29	47.90	54	-6.1
5400	71.71	PK	37	1.5	V	-2.29	69.42	74	-4.58
5400	51.33	Ave.	37	1.5	V	-2.29	49.04	54	-4.96
5470	47.37	PK	39	2.1	H	-2.22	45.15	68.2	-23.05
5470	53.50	PK	62	1.9	V	-2.22	51.28	68.2	-16.92
11000	41.12	PK	207	1.6	H	9.67	50.79	74	-23.21
11000	46.83	PK	146	1.9	V	9.67	56.50	74	-17.5
5580 MHz									
11160	42.07	PK	32	1.5	H	8.68	50.75	74	-23.25
11160	41.53	PK	273	1.7	V	8.68	50.21	74	-23.79
5700 MHz									
5725	66.46	PK	69	2.0	H	-1.96	64.50	68.2	-3.7
5725	66.11	PK	311	1.7	V	-1.96	64.15	68.2	-4.05
5745	64.23	PK	58	1.9	H	-1.91	62.32	68.2	-5.88
5745	64.55	PK	91	1.6	V	-1.91	62.64	68.2	-5.56
11400	43.63	PK	78	1.8	H	7.26	50.89	74	-23.11
11400	43.64	PK	73	1.5	V	7.26	50.90	74	-23.10

Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part15.407	
	Reading (dBμV)	Detector (PK/QP/Ave.)	Angle Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11n20									
5500 MHz									
5400	69.95	PK	52	1.6	H	-2.29	67.66	74	-6.34
5400	50.63	Ave.	52	1.6	H	-2.29	48.34	54	-5.66
5400	71.79	PK	357	1.8	V	-2.29	69.50	74	-4.5
5400	51.13	Ave.	357	1.8	V	-2.29	48.84	54	-5.16
5470	47.26	PK	359	1.8	H	-2.22	45.04	68.2	-23.16
5470	53.28	PK	239	1.9	V	-2.22	51.06	68.2	-17.14
11000	40.74	PK	353	1.8	H	9.67	50.41	74	-23.59
11000	46.84	PK	112	1.6	V	9.67	56.51	74	-17.49
5580 MHz									
11160	41.77	PK	212	1.8	H	8.68	50.45	74	-23.55
11160	41.82	PK	157	1.7	V	8.68	50.5	74	-23.50
5700 MHz									
5725	67.45	PK	111	2.0	H	-1.96	65.49	68.2	-2.71
5725	66.30	PK	201	1.6	V	-1.96	64.34	68.2	-3.86
5745	64.11	PK	279	1.9	H	-1.91	62.20	68.2	-6.00
5745	64.13	PK	15	2.0	V	-1.91	62.22	68.2	-5.98
11400	43.88	PK	171	1.9	H	7.26	51.14	74	-22.86
11400	43.42	PK	114	1.8	V	7.26	50.68	74	-23.32

Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part15.407	
	Reading (dBμV)	Detector (PK/QP/Ave.)	Angle Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11n40									
5510 MHz									
5400	70.14	PK	114	1.9	H	-2.29	67.85	74	-6.15
5400	49.82	Ave.	114	1.9	H	-2.29	47.53	54	-6.47
5400	72.58	PK	188	2.0	V	-2.29	70.29	74	-3.71
5400	51.55	Ave.	188	2.0	V	-2.29	49.26	54	-4.74
5470	47.15	PK	108	1.8	H	-2.22	44.93	68.2	-23.27
5470	53.27	PK	110	2.1	V	-2.22	51.05	68.2	-17.15
11020	41.18	PK	63	1.6	H	9.57	50.75	74	-23.25
11020	46.96	PK	53	1.7	V	9.57	56.53	74	-17.47
5550 MHz									
11100	40.63	PK	332	1.5	H	9.12	49.75	74	-24.25
11100	40.38	PK	139	1.7	V	9.12	49.50	74	-24.50
5670 MHz									
5725	65.92	PK	236	1.7	H	-1.96	63.96	68.2	-4.24
5725	65.35	PK	12	2.0	V	-1.96	63.39	68.2	-4.81
5745	64.72	PK	165	2.1	H	-1.91	62.81	68.2	-5.39
5745	63.92	PK	187	2.0	V	-1.91	62.01	68.2	-6.19
11340	43.01	PK	272	1.9	H	7.67	50.68	74	-23.32
11340	42.82	PK	32	1.7	V	7.67	50.49	74	-23.51

Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part15.407	
	Reading (dBμV)	Detector (PK/QP/Ave.)	Angle Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11ac20									
5500 MHz									
5400	70.10	PK	218	1.7	H	-2.29	67.81	74	-6.19
5400	50.58	Ave.	218	1.7	H	-2.29	48.29	54	-5.71
5400	71.87	PK	32	1.8	V	-2.29	69.58	74	-4.42
5400	51.32	Ave.	32	1.8	V	-2.29	49.03	54	-4.97
5470	47.46	PK	357	1.6	H	-2.22	45.24	68.2	-22.96
5470	53.21	PK	17	1.8	V	-2.22	50.99	68.2	-17.21
11000	41.13	PK	343	1.7	H	9.67	50.80	74	-23.2
11000	46.81	PK	149	1.7	V	9.67	56.48	74	-17.52
5580 MHz									
11160	41.76	PK	135	1.7	H	8.68	50.44	74	-23.56
11160	41.81	PK	26	2	V	8.68	50.49	74	-23.51
5700 MHz									
5725	65.73	PK	49	1.7	H	-1.96	63.77	68.2	-4.43
5725	65.42	PK	136	1.8	V	-1.96	63.46	68.2	-4.74
5745	64.45	PK	148	1.7	H	-1.91	62.54	68.2	-5.66
5745	64.73	PK	299	1.6	V	-1.91	62.82	68.2	-5.38
11400	43.92	PK	219	1.6	H	7.26	51.18	74	-22.82
11400	43.44	PK	39	1.5	V	7.26	50.70	74	-23.30

Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part15.407	
	Reading (dBμV)	Detector (PK/QP/Ave.)	Angle Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11ac40									
5510 MHz									
5400	69.80	PK	18	1.5	H	-2.29	67.51	74	-6.49
5400	49.81	Ave.	18	1.5	H	-2.29	47.52	54	-6.48
5400	73.60	PK	152	1.5	V	-2.29	71.31	74	-2.69
5400	53.06	Ave.	152	1.5	V	-2.29	50.77	54	-3.23
5470	46.46	PK	281	2.0	H	-2.22	44.24	68.2	-23.96
5470	53.33	PK	19	2.1	V	-2.22	51.11	68.2	-17.09
11020	40.43	PK	293	1.9	H	9.57	50.00	74	-24
11020	46.83	PK	73	1.6	V	9.57	56.40	74	-17.6
5550 MHz									
11100	39.64	PK	199	2.0	H	9.12	48.76	74	-25.24
11100	40.01	PK	257	1.9	V	9.12	49.13	74	-24.87
5670 MHz									
5725	65.46	PK	251	1.8	H	-1.96	63.50	68.2	-4.70
5725	65.33	PK	116	1.8	V	-1.96	63.37	68.2	-4.83
5745	64.38	PK	51	1.7	H	-1.91	62.47	68.2	-5.73
5745	64.85	PK	316	1.8	V	-1.91	62.94	68.2	-5.26
11340	42.16	PK	184	1.7	H	7.67	49.83	74	-24.17
11340	42.22	PK	151	2.0	V	7.67	49.89	74	-24.11

Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBµV/m)	FCC Part15.407	
	Reading (dBµV)	Detector (PK/QP/Ave.)	Angle Degree	Height (m)	Polar (H / V)			Limit (dBµV/m)	Margin (dB)
802.11ac80									
5530 MHz									
5400	69.85	PK	203	1.5	H	-2.29	67.56	74	-6.44
5400	49.84	Ave.	203	1.5	H	-2.29	47.55	54	-6.45
5400	74.03	PK	52	1.6	V	-2.29	71.74	74	-2.26
5400	52.50	Ave.	52	1.6	V	-2.29	50.21	54	-3.79
5470	45.40	PK	18	1.9	H	-2.22	43.18	68.2	-25.02
5470	52.33	PK	249	2.0	V	-2.22	50.11	68.2	-18.09
11060	39.50	PK	328	2.0	H	9.37	48.87	74	-25.13
11060	46.05	PK	154	1.9	V	9.37	55.42	74	-18.58
5610 MHz									
5725	65.79	PK	291	2.0	H	-1.96	63.83	68.2	-4.37
5725	65.01	PK	190	2.0	V	-1.96	63.05	68.2	-5.15
5745	64.48	PK	2	1.9	H	-1.91	62.57	68.2	-5.63
5745	64.83	PK	250	1.6	V	-1.91	62.92	68.2	-5.28
11220	41.43	PK	197	1.5	H	8.33	49.76	74	-24.24
11220	41.10	PK	161	1.5	V	8.33	49.43	74	-24.57

5725-5850 MHz:

Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part15.407	
	Reading (dBμV)	Detector (PK/QP/Ave.)	Angle Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11a									
5745 MHz									
5650	64.89	PK	22	1.5	H	-1.95	62.94	68.2	-5.26
5650	64.52	PK	134	1.7	V	-1.95	62.57	68.2	-5.63
5700	65.39	PK	98	1.9	H	-2.02	63.37	105.2	-41.83
5700	65.58	PK	324	1.8	V	-2.02	63.56	105.2	-41.64
5720	65.35	PK	137	1.8	H	-1.97	63.38	110.8	-47.42
5720	65.75	PK	81	1.8	V	-1.97	63.78	110.8	-47.02
5725	70.42	PK	151	1.9	H	-1.96	68.46	122.2	-53.74
5725	69.64	PK	46	1.9	V	-1.96	67.68	122.2	-54.52
11490	43.1	PK	257	2.0	H	6.63	49.73	74	-24.27
11490	42.91	PK	340	1.6	V	6.63	49.54	74	-24.46
5785 MHz									
11570	43.4	PK	265	1.9	H	6.59	49.99	74	-24.01
11570	43.01	PK	256	1.9	V	6.59	49.6	74	-24.4
5825 MHz									
5850	65.41	PK	245	1.8	H	-1.81	63.6	122.2	-58.6
5850	65.76	PK	282	1.9	V	-1.81	63.95	122.2	-58.25
5855	66.37	PK	145	1.8	H	-1.82	64.55	110.8	-46.25
5855	64.77	PK	177	2.1	V	-1.82	62.95	110.8	-47.85
5875	66.5	PK	161	1.7	H	-1.84	64.66	105.2	-40.54
5875	65.83	PK	285	2.0	V	-1.84	63.99	105.2	-41.21
5925	65.8	PK	346	1.5	H	-1.82	63.98	68.2	-4.22
5925	66.25	PK	328	2.0	V	-1.82	64.43	68.2	-3.77
11650	41.53	PK	280	1.7	H	6.77	48.3	74	-25.7
11650	41.59	PK	268	1.8	V	6.77	48.36	74	-25.64

Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part15.407	
	Reading (dBμV)	Detector (PK/QP/Ave.)	Angle Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11n20									
5745 MHz									
5650	64.52	PK	23	2.0	H	-1.95	62.57	68.2	-5.63
5650	64.81	PK	32	2.0	V	-1.95	62.86	68.2	-5.34
5700	65.85	PK	306	2.0	H	-2.02	63.83	105.2	-41.37
5700	65.48	PK	336	1.8	V	-2.02	63.46	105.2	-41.74
5720	67.21	PK	165	1.8	H	-1.97	65.24	110.8	-45.56
5720	66.03	PK	170	2.0	V	-1.97	64.06	110.8	-46.74
5725	69.75	PK	139	1.9	H	-1.96	67.79	122.2	-54.41
5725	68.84	PK	106	1.9	V	-1.96	66.88	122.2	-55.32
11490	43.1	PK	47	1.7	H	6.63	49.73	74	-24.27
11490	42.91	PK	91	1.8	V	6.63	49.54	74	-24.46
5785 MHz									
11570	43.06	PK	241	1.9	H	6.59	49.65	74	-24.35
11570	42.76	PK	341	1.6	V	6.59	49.35	74	-24.65
5825 MHz									
5850	65.24	PK	207	1.6	H	-1.81	63.43	122.2	-58.77
5850	66.91	PK	0	2.0	V	-1.81	65.1	122.2	-57.1
5855	64.73	PK	313	1.9	H	-1.82	62.91	110.8	-47.89
5855	64.13	PK	213	1.5	V	-1.82	62.31	110.8	-48.49
5875	65.92	PK	314	1.9	H	-1.84	64.08	105.2	-41.12
5875	64.27	PK	118	1.6	V	-1.84	62.43	105.2	-42.77
5925	65.31	PK	191	1.7	H	-1.82	63.49	68.2	-4.71
5925	66.21	PK	111	1.6	V	-1.82	64.39	68.2	-3.81
11650	41.76	PK	324	1.8	H	6.77	48.53	74	-25.47
11650	41.74	PK	63	1.6	V	6.77	48.51	74	-25.49

Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part15.407	
	Reading (dBμV)	PK/QP/Ave.	Angle Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11n40									
5775 MHz									
5650	64.01	PK	115.00	2.10	H	-1.95	62.06	68.20	-6.14
5650	63.98	PK	234.00	1.70	V	-1.95	62.03	68.20	-6.17
5700	65.17	PK	275.00	1.70	H	-2.02	63.15	105.20	-42.05
5700	65.38	PK	13.00	1.90	V	-2.02	63.36	105.20	-41.84
5720	69.68	PK	152.00	1.80	H	-1.97	67.71	110.80	-43.09
5720	69.62	PK	216.00	1.60	V	-1.97	67.65	110.80	-43.15
5725	71.01	PK	263.00	2.00	H	-1.96	69.05	122.20	-53.15
5725	69.96	PK	274.00	2.10	V	-1.96	68.00	122.20	-54.20
11510	43.21	PK	345.00	1.90	H	6.59	49.80	74.00	-24.20
11510	43.23	PK	315.00	2.10	V	6.59	49.82	74.00	-24.18
5795 MHz									
5850	66.86	PK	298	2.0	H	-1.81	65.05	122.2	-57.15
5850	66.67	PK	198	1.9	V	-1.81	64.86	122.2	-57.34
5855	66.78	PK	358	1.6	H	-1.82	64.96	110.8	-45.84
5855	66.87	PK	105	1.7	V	-1.82	65.05	110.8	-45.75
5875	66.52	PK	237	1.8	H	-1.84	64.68	105.2	-40.52
5875	65.99	PK	347	1.9	V	-1.84	64.15	105.2	-41.05
5925	65.54	PK	346	1.9	H	-1.82	63.72	68.2	-4.48
5925	65.29	PK	315	2.0	V	-1.82	63.47	68.2	-4.73
11590	43.03	PK	215	1.6	H	6.57	49.6	74	-24.4
11590	43.16	PK	294	1.5	V	6.57	49.73	74	-24.27

Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part15.407	
	Reading (dBμV)	Detector (PK/QP/Ave.)	Angle Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11ac20									
5745 MHz									
5650	64.64	PK	90	1.9	H	-1.95	62.69	68.2	-5.51
5650	64.73	PK	318	1.8	V	-1.95	62.78	68.2	-5.42
5700	66.07	PK	65	1.7	H	-2.02	64.05	105.2	-41.15
5700	65.08	PK	44	1.5	V	-2.02	63.06	105.2	-42.14
5720	66.81	PK	319	2.1	H	-1.97	64.84	110.8	-45.96
5720	66.19	PK	180	2.0	V	-1.97	64.22	110.8	-46.58
5725	70.16	PK	78	1.7	H	-1.96	68.2	122.2	-54
5725	68.53	PK	335	1.5	V	-1.96	66.57	122.2	-55.63
11490	42.67	PK	45	1.9	H	6.63	49.3	74	-24.7
11490	42.55	PK	156	1.9	V	6.63	49.18	74	-24.82
5785 MHz									
11570	42.95	PK	175	1.5	H	6.59	49.54	74	-24.46
11570	42.47	PK	302	1.6	V	6.59	49.06	74	-24.94
5825 MHz									
5850	64.95	PK	101	1.8	H	-1.81	63.14	122.2	-59.06
5850	67.35	PK	97	1.6	V	-1.81	65.54	122.2	-56.66
5855	65.12	PK	196	2.0	H	-1.82	63.3	110.8	-47.5
5855	64.58	PK	36	2.0	V	-1.82	62.76	110.8	-48.04
5875	65.44	PK	175	1.7	H	-1.84	63.6	105.2	-41.6
5875	64.48	PK	168	1.9	V	-1.84	62.64	105.2	-42.56
5925	65.31	PK	242	1.5	H	-1.82	63.49	68.2	-4.71
5925	65.98	PK	156	1.6	V	-1.82	64.16	68.2	-4.04
11650	41.63	PK	258	1.9	H	6.77	48.4	74	-25.6
11650	41.55	PK	154	2.0	V	6.77	48.32	74	-25.68

Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part15.407	
	Reading (dBμV)	PK/QP/Ave.	Angle Degree	Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
802.11ac40									
5775 MHz									
5650	64.37	PK	344.00	1.70	H	-1.95	62.42	68.20	-5.78
5650	64.03	PK	309.00	2.00	V	-1.95	62.08	68.20	-6.12
5700	64.71	PK	29.00	2.10	H	-2.02	62.69	105.20	-42.51
5700	65.50	PK	348.00	1.90	V	-2.02	63.48	105.20	-41.72
5720	69.42	PK	357.00	1.90	H	-1.97	67.45	110.80	-43.35
5720	69.32	PK	259.00	1.80	V	-1.97	67.35	110.80	-43.45
5725	70.54	PK	329.00	1.50	H	-1.96	68.58	122.20	-53.62
5725	69.59	PK	133.00	1.70	V	-1.96	67.63	122.20	-54.57
11510	42.93	PK	239.00	1.90	H	6.59	49.52	74.00	-24.48
11510	43.09	PK	74.00	1.70	V	6.59	49.68	74.00	-24.32
5795 MHz									
5850	67.22	PK	139	1.7	H	-1.81	65.41	122.2	-56.79
5850	66.5	PK	59	1.6	V	-1.81	64.69	122.2	-57.51
5855	66.88	PK	218	1.6	H	-1.82	65.06	110.8	-45.74
5855	66.97	PK	29	1.8	V	-1.82	65.15	110.8	-45.65
5875	66.96	PK	223	1.9	H	-1.84	65.12	105.2	-40.08
5875	65.74	PK	325	1.8	V	-1.84	63.9	105.2	-41.3
5925	65.1	PK	301	1.6	H	-1.82	63.28	68.2	-4.92
5925	65.16	PK	177	1.6	V	-1.82	63.34	68.2	-4.86
11590	43.37	PK	227	2.0	H	6.57	49.94	74	-24.06
11590	43.05	PK	251	1.7	V	6.57	49.62	74	-24.38

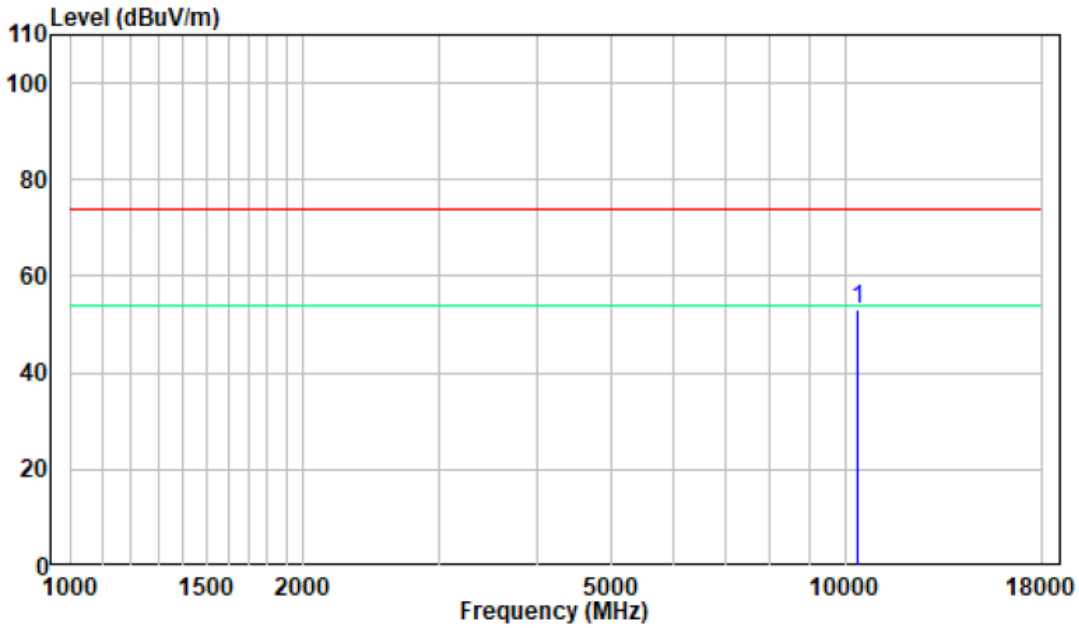
Frequency (MHz)	Receiver		Turn-Table	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBµV/m)	FCC Part15.407	
	Reading (dBµV)	Detector (PK/QP/Ave.)	Angle Degree	Height (m)	Polar (H / V)			Limit (dBµV/m)	Margin (dB)
802.11AC80									
5775MHz									
5650	64.3	PK	160	1.5	H	-1.95	62.35	68.2	-5.85
5650	64.5	PK	17	1.9	V	-1.95	62.55	68.2	-5.65
5700	64.58	PK	73	1.5	H	-2.02	62.56	105.2	-42.64
5700	65.53	PK	271	1.9	V	-2.02	63.51	105.2	-41.69
5720	69.72	PK	165	2.1	H	-1.97	67.75	110.8	-43.05
5720	69.3	PK	246	1.8	V	-1.97	67.33	110.8	-43.47
5725	66.83	PK	171	2.0	H	-1.96	64.87	122.2	-57.33
5725	67.03	PK	339	2.0	V	-1.96	65.07	122.2	-57.13
5850	67.44	PK	158	1.7	H	-1.81	65.63	122.2	-56.57
5850	66.18	PK	277	2.0	V	-1.81	64.37	122.2	-57.83
5855	66.52	PK	320	1.5	H	-1.82	64.7	110.8	-46.1
5855	66.67	PK	207	1.9	V	-1.82	64.85	110.8	-45.95
5875	66.65	PK	250	2.0	H	-1.84	64.81	105.2	-40.39
5875	65.28	PK	274	1.9	V	-1.84	63.44	105.2	-41.76
5925	64.71	PK	162	2.1	H	-1.82	62.89	68.2	-5.31
5925	65.52	PK	225	2.1	V	-1.82	63.7	68.2	-4.50
11550	42.95	PK	313	1.9	H	6.61	49.56	74	-24.44
11550	43.00	PK	50	1.8	V	6.61	49.61	74	-24.39

Note:
Corrected Factor = Antenna factor (RX) + Cable Loss – Amplifier Factor
Corrected Amplitude = Corrected Factor + Reading
Margin = Corrected. Amplitude - Limit
The other spurious emission which is in the noise floor level was not recorded.
The test result of peak was less than the limit of average, so just peak values were recorded.

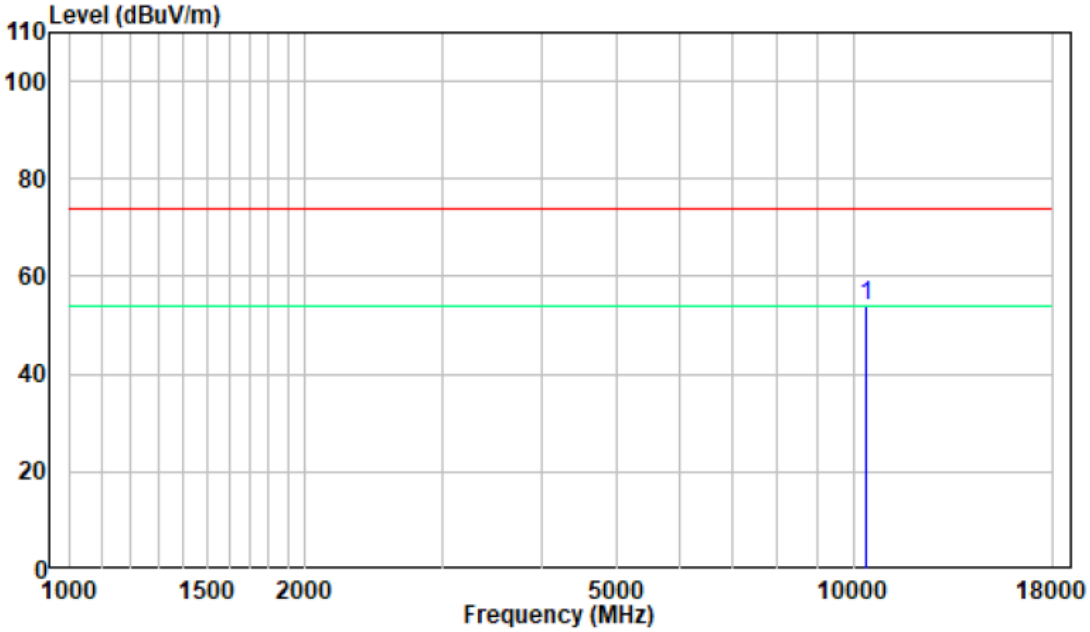
1-18GHz

Pre-scan for 802.11a, 5280MHz

Horizontal:



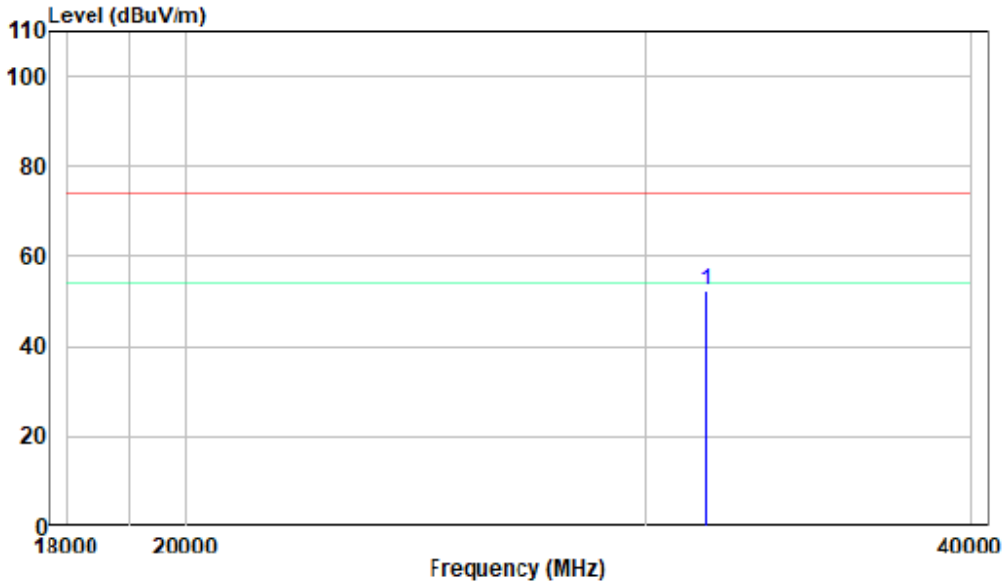
Vertical:



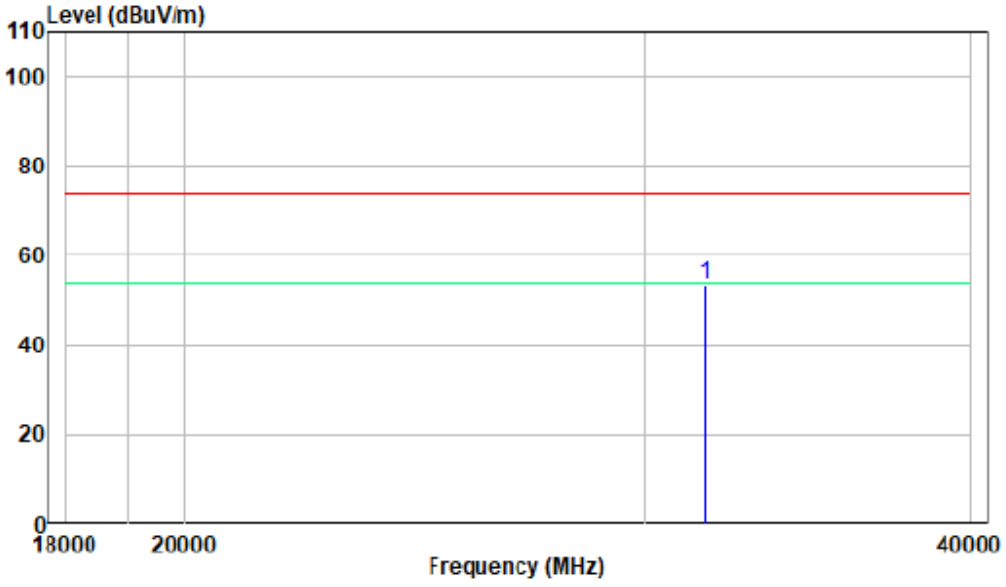
18-40GHz

Pre-scan for 802.11a, 5280MHz

Horizontal:



Vertical:



FCC §15.407(a),(e) – 26 dB & 6dB EMISSION BANDWIDTH

Applicable Standard

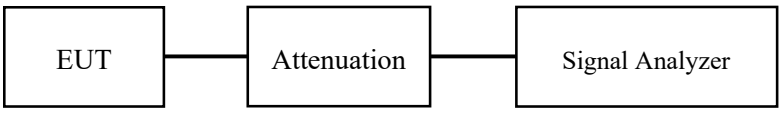
The maximum power spectral density is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test. If the device cannot be connected directly, alternative techniques acceptable to the Commission may be used. Measurements in the 5.725-5.85 GHz band are made over a reference bandwidth of 500 kHz or the 26 dB emission bandwidth of the device, whichever is less. Measurements in the 5.15-5.25 GHz, 5.25-5.35 GHz, and the 5.47-5.725 GHz bands are made over a bandwidth of 1 MHz or the 26 dB emission bandwidth of the device, whichever is less. A narrower resolution bandwidth can be used, provided that the measured power is integrated over the full reference bandwidth.

Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

Test Procedure

1. Emission Bandwidth (EBW)
a) Set RBW = approximately 1% of the emission bandwidth.
b) Set the VBW > RBW.
c) Detector = Peak.
d) Trace mode = max hold.
e) Measure the maximum width of the emission that is 26 dB down from the maximum of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

2. **Minimum Emission Bandwidth for the band 5.725-5.85 GHz**
Section 15.407(e) specifies the minimum 6 dB emission bandwidth of at least 500 KHz for the band 5.725-5.85 GHz. The following procedure shall be used for measuring this bandwidth:
a) Set RBW = 100 kHz.
b) Set the video bandwidth (VBW) ≥ 3 × RBW.
c) Detector = Peak.
d) Trace mode = max hold.
e) Sweep = auto couple.
f) Allow the trace to stabilize.
g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.



Test Data

Environmental Conditions

Temperature:	24 ℃
Relative Humidity:	55%
ATM Pressure:	101.0 kPa

The testing was performed by Fan Yang from 2021-11-22 to2021-12-06.

EUT operation mode: Transmitting

Test Result: Pass

Please refer to the Appendix.

FCC §15.407(a) – CONDUCTED TRANSMITTER OUTPUT POWER

Applicable Standard

For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

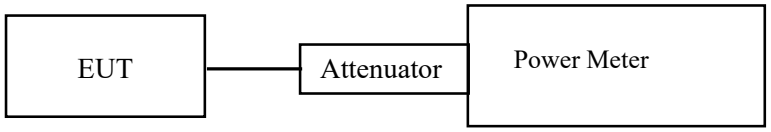
For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

Test Procedure

c. Place the EUT on a bench and set it in transmitting mode.

d. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to one test equipment.

e. Add a correction factor to the display.



Test Data

Environmental Conditions

Temperature:	24 ℃
Relative Humidity:	55%
ATM Pressure:	101.0 kPa

The testing was performed by Fan Yang on 2021-11-22 and 2021-12-06.

EUT operation mode: Transmitting

Test Result: Pass

Please refer to the Appendix.

FCC §15.407(a) - POWER SPECTRAL DENSITY

For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

Test Procedure

For devices operating in the bands 5.15-5.25 GHz, 5.25-5.35 GHz, and 5.47-5.725 GHz, the above procedures make use of 1 MHz RBW to satisfy directly the 1 MHz reference bandwidth specified in § 15.407(a)(5). For devices operating in the band 5.725-5.85 GHz, the rules specify a measurement bandwidth of 500 kHz. Many spectrum analyzers do not have 500 kHz RBW, thus a narrower RBW may need to be used. The rules permit the use of a RBWs less than 1 MHz, or 500 kHz, "provided that the measured power is integrated over the full reference bandwidth" to show the total power over the specified measurement bandwidth (i.e., 1 MHz, or 500 kHz). If measurements are performed using a reduced resolution bandwidth (< 1 MHz, or < 500 kHz) and integrated over 1 MHz, or 500 kHz bandwidth, the following adjustments to the procedures apply:

a) Set RBW $\geqslant$ 1/T, where T is defined in section II.B.l.a).
b) Set VBW $\geqslant$ 3 RBW.
c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add 10 log (500 kHz/RBW) to the measured result, whereas RBW (< 500 kHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.
d) If measurement bandwidth of Maximum PSD is specified in 1 MHz, add 10 log (1MHz/RBW) to the measured result, whereas RBW (< 1 MHz) is the reduced resolution bandwidth of spectrum analyzer set during measurement.
e) Care must be taken to ensure that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.

Test Data

Environmental Conditions

Temperature:	24 ℃
Relative Humidity:	55%
ATM Pressure:	101.0 kPa

The testing was performed by Black Ding from on 2021-11-22.

EUT operation mode: Transmitting

Test Result: Pass

Please refer to the Appendix.

APPENDIX

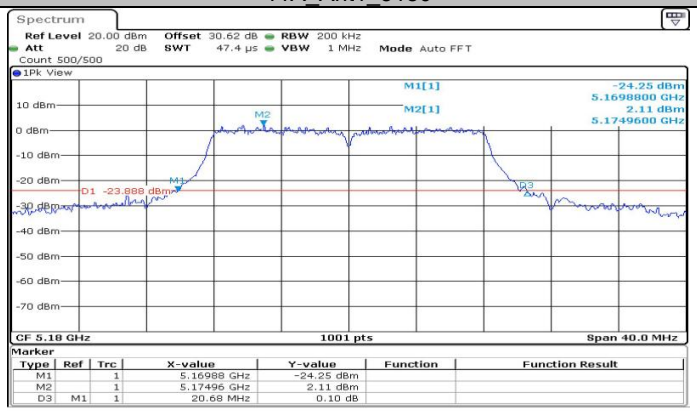
Appendix A1: Emission Bandwidth

Test Result

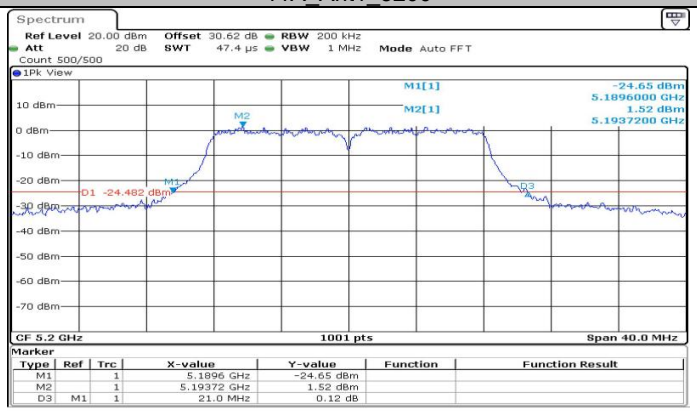
Test Mode	Antenna	Channel	26db EBW [MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	20.680	---	PASS
		5200	21.000	---	PASS
		5240	20.800	---	PASS
		5260	21.160	---	PASS
		5280	21.080	---	PASS
		5320	21.800	---	PASS
		5500	21.200	---	PASS
		5580	20.960	---	PASS
		5700	20.960	---	PASS
11N20SISO	Ant1	5180	21.320	---	PASS
		5200	21.680	---	PASS
		5240	21.840	---	PASS
		5260	21.480	---	PASS
		5280	21.920	---	PASS
		5320	20.880	---	PASS
		5500	21.200	---	PASS
		5580	21.360	---	PASS
		5700	22.120	---	PASS
11N40SISO	Ant1	5190	44.560	---	PASS
		5230	45.760	---	PASS
		5270	48.400	---	PASS
		5310	49.760	---	PASS
		5510	42.560	---	PASS
		5550	42.400	---	PASS
		5670	43.440	---	PASS
11AC20SISO	Ant1	5180	21.240	---	PASS
		5200	21.240	---	PASS
		5240	21.480	---	PASS
		5260	21.320	---	PASS
		5280	21.440	---	PASS
		5320	21.320	---	PASS
		5500	21.640	---	PASS
		5580	21.600	---	PASS
		5700	21.600	---	PASS
11AC40SISO	Ant1	5190	47.680	---	PASS
		5230	43.920	---	PASS
		5270	46.080	---	PASS
		5310	45.600	---	PASS
		5510	42.480	---	PASS
		5550	42.480	---	PASS
		5670	43.920	---	PASS
11AC80SISO	Ant1	5210	82.240	---	PASS
		5290	82.560	---	PASS
		5530	83.520	---	PASS
		5610	83.520	---	PASS

Test Graphs

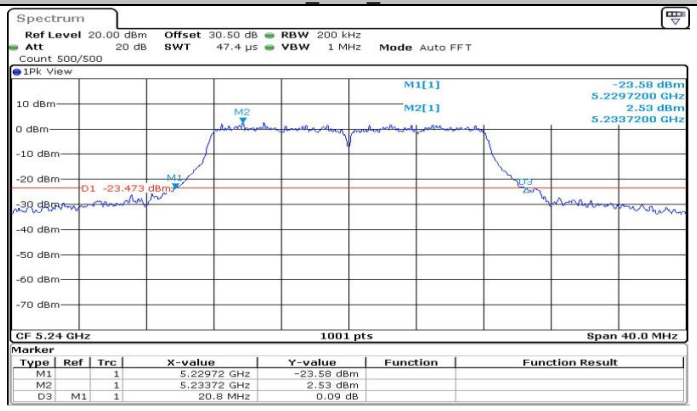
11A_Ant1_5180



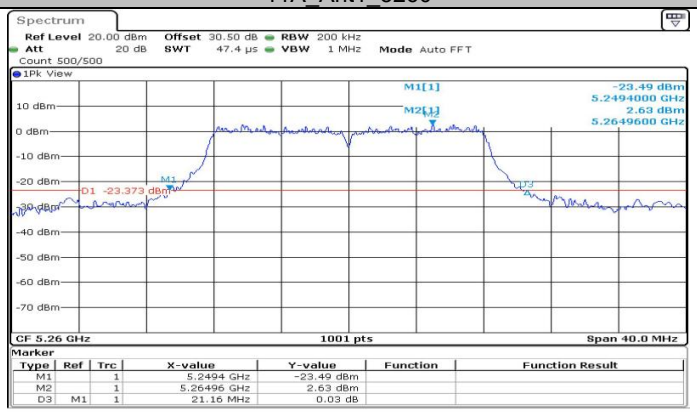
11A_Ant1_5200



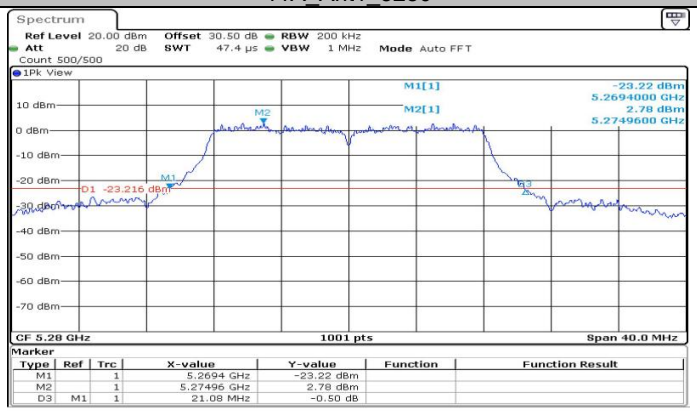
11A_Ant1_5240



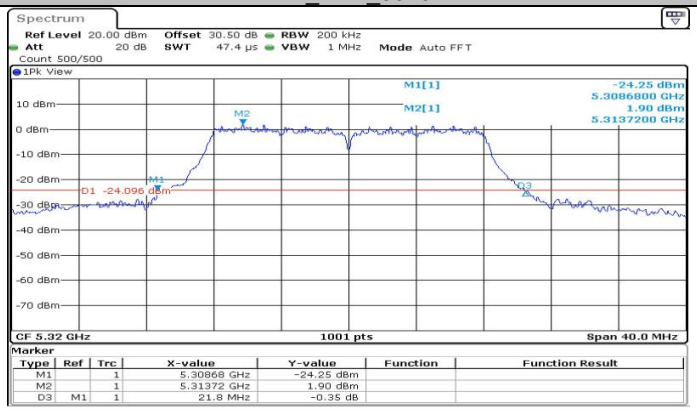
11A_Ant1_5260



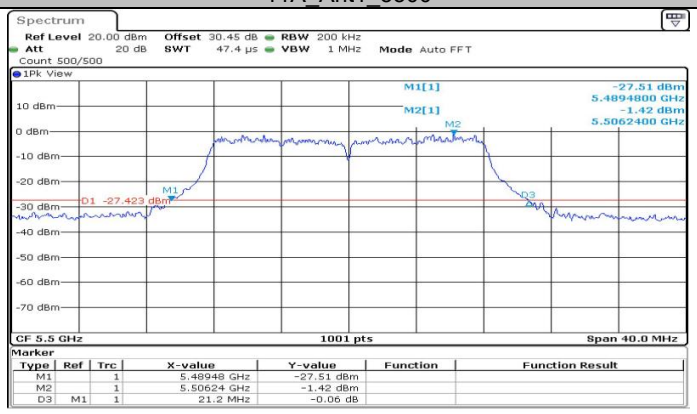
11A_Ant1_5280



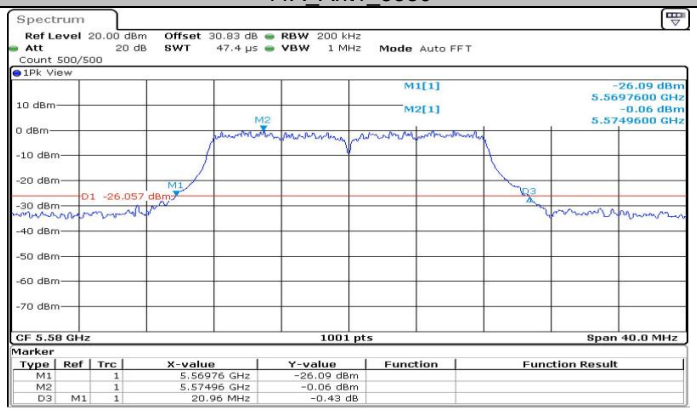
11A_Ant1_5320



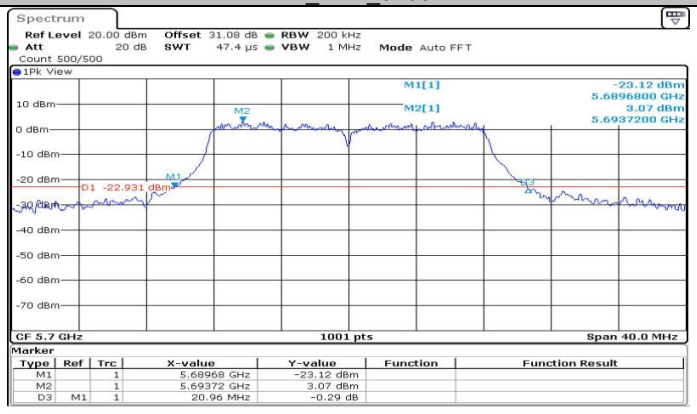
11A_Ant1_5500



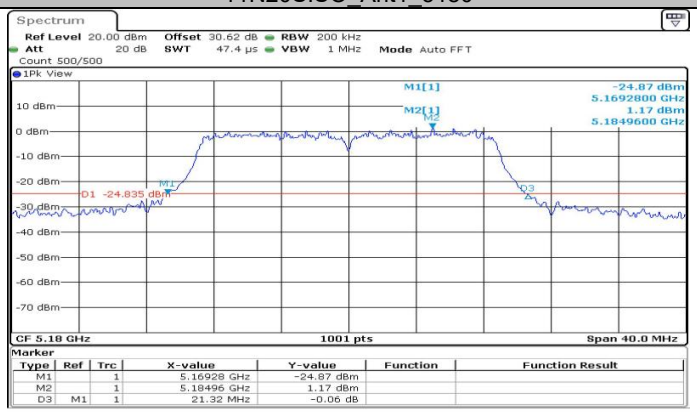
11A_Ant1_5580



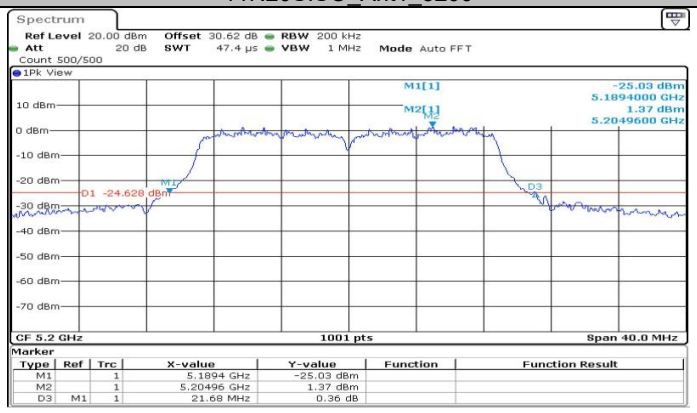
11A_Ant1_5700



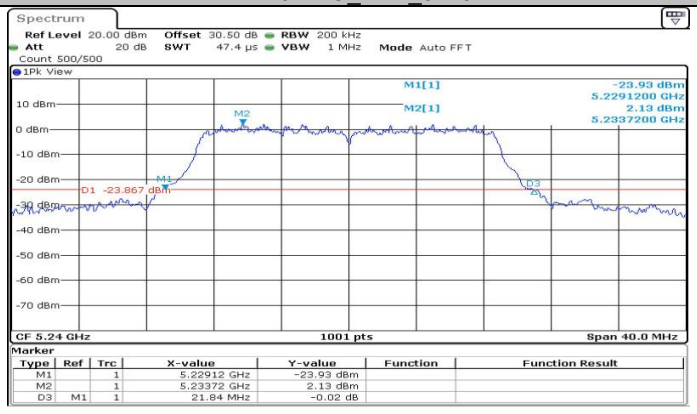
11N20SISO_Ant1_5180



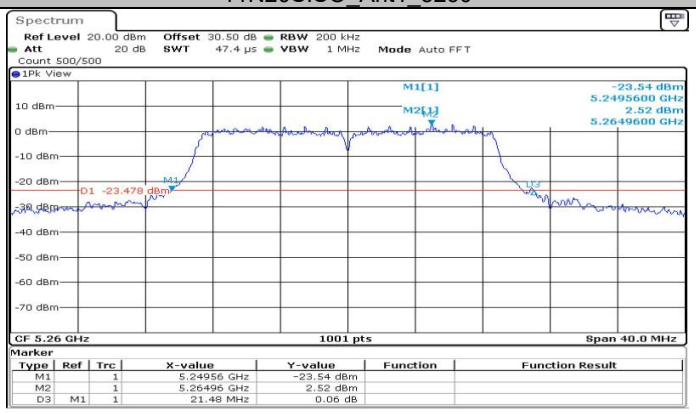
11N20SISO_Ant1_5200



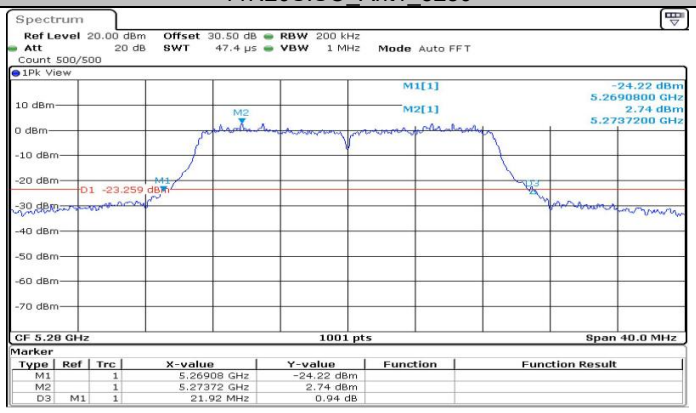
11N20SISO_Ant1_5240



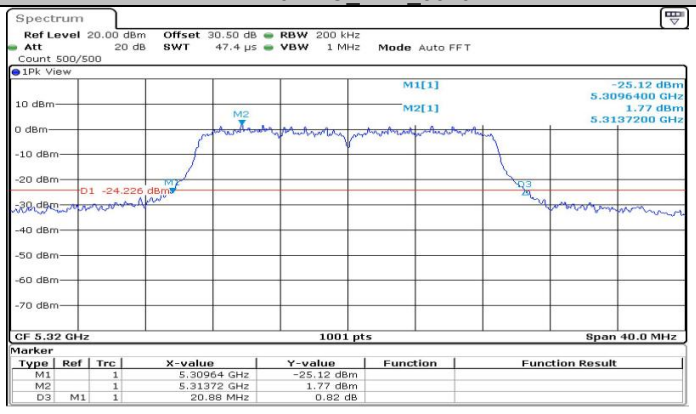
11N20SISO_Ant1_5260



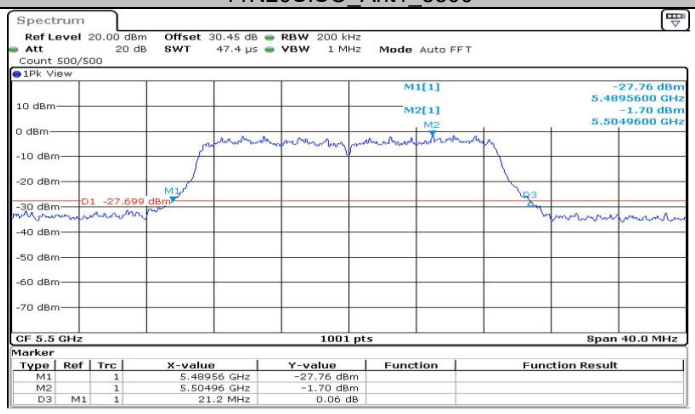
11N20SISO_Ant1_5280



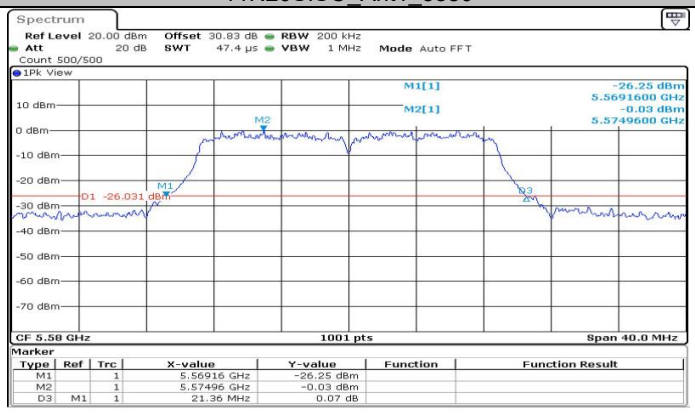
11N20SISO_Ant1_5320



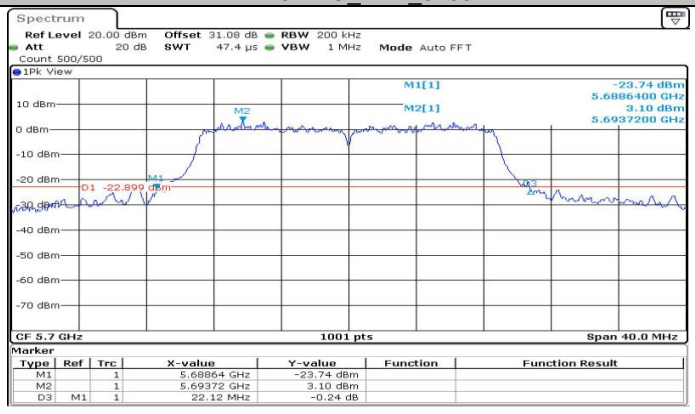
11N20SISO_Ant1_5500



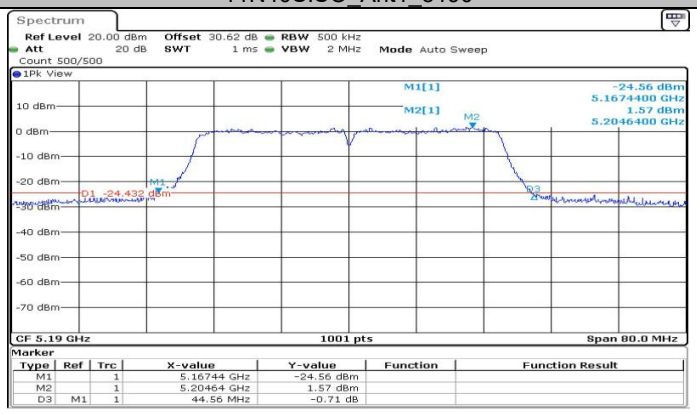
11N20SISO_Ant1_5580



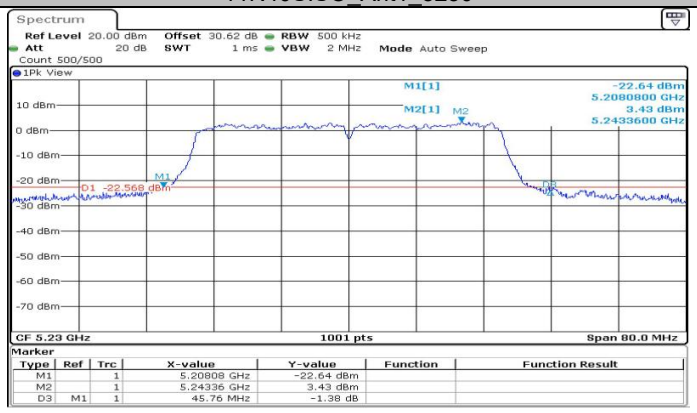
11N20SISO_Ant1_5700



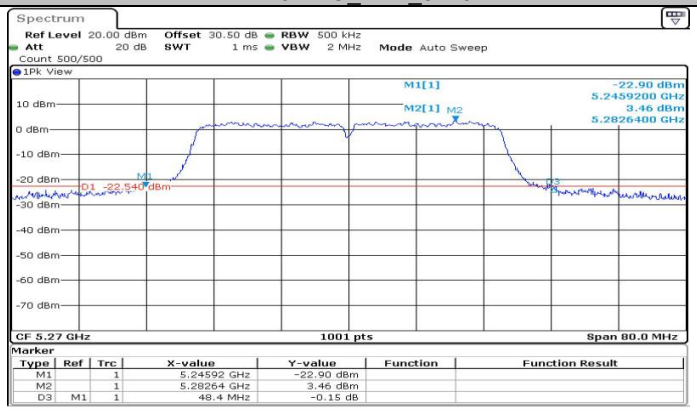
11N40SISO_Ant1_5190



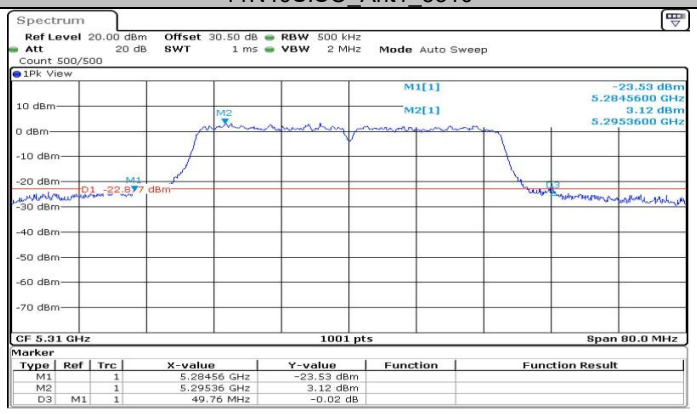
11N40SISO_Ant1_5230



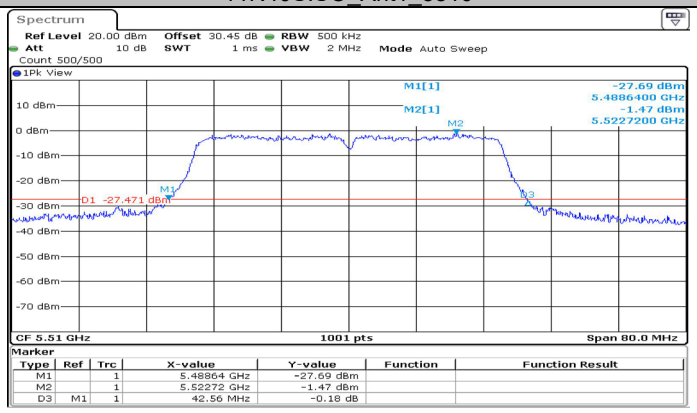
11N40SISO_Ant1_5270



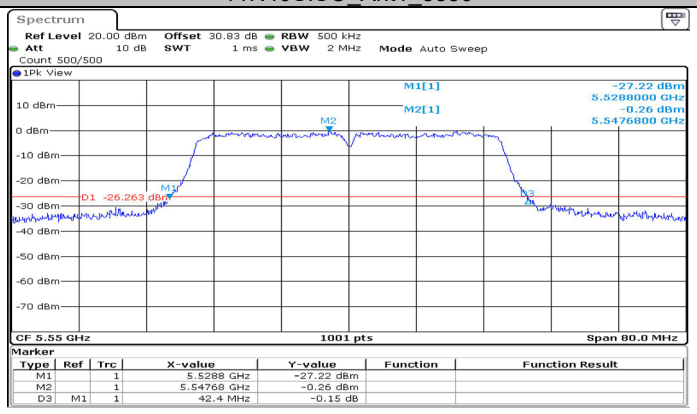
11N40SISO_Ant1_5310



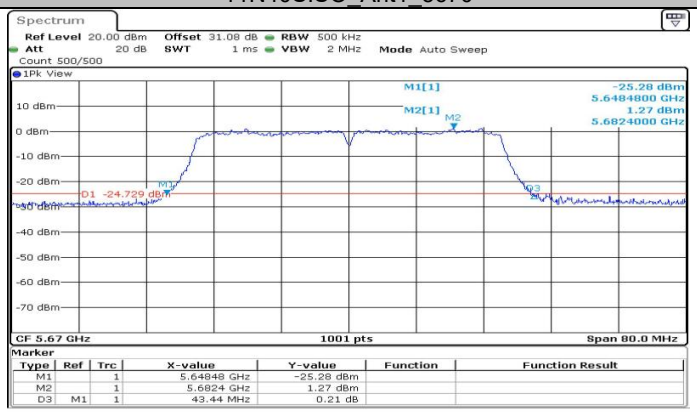
11N40SISO_Ant1_5510



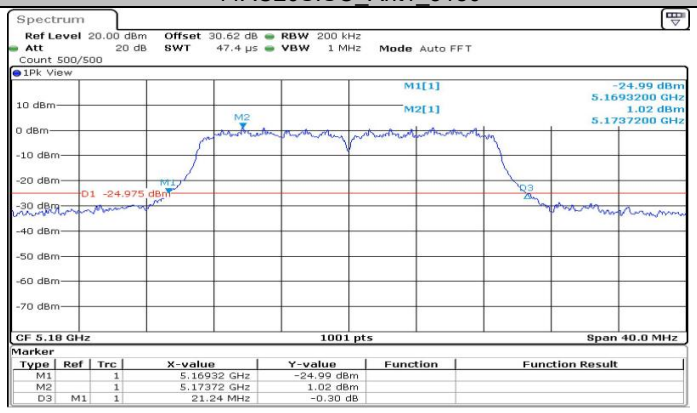
11N40SISO_Ant1_5550



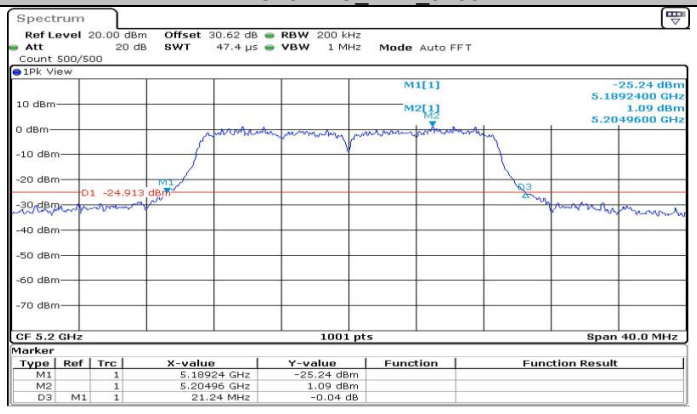
11N40SISO_Ant1_5670



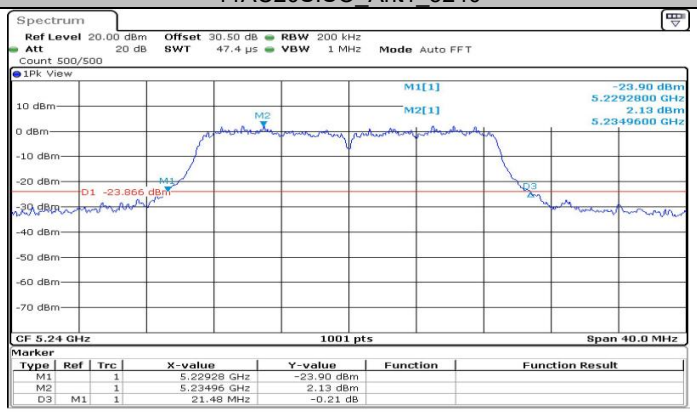
11AC20SISO_Ant1_5180



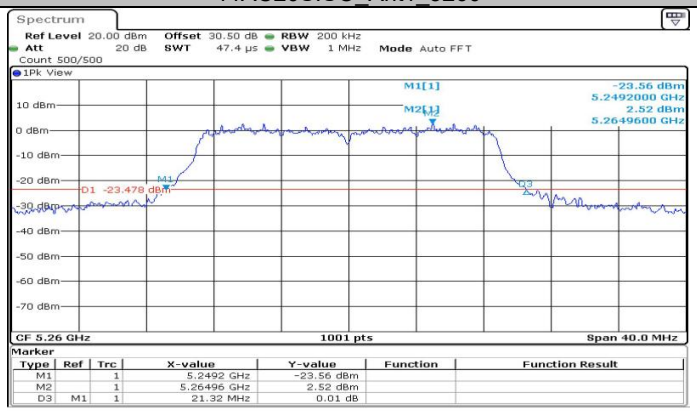
11AC20SISO_Ant1_5200



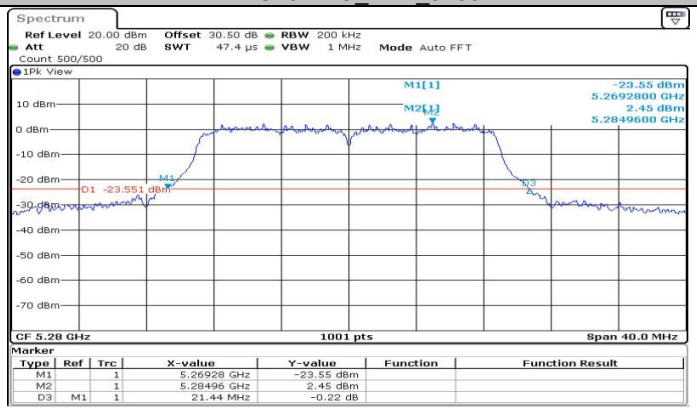
11AC20SISO_Ant1_5240



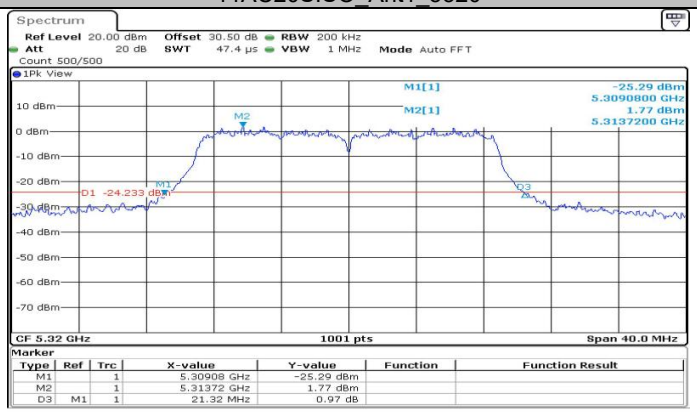
11AC20SISO_Ant1_5260



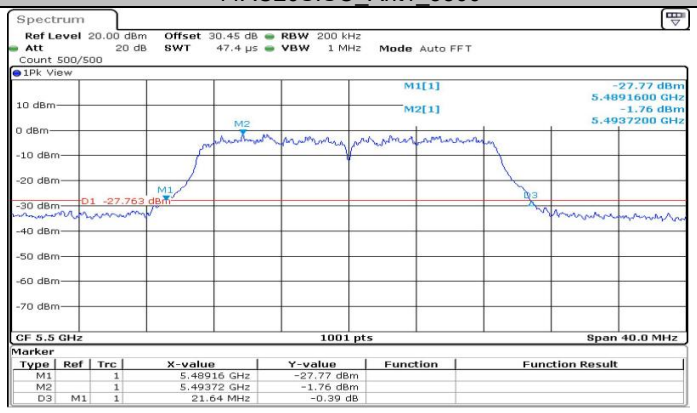
11AC20SISO_Ant1_5280



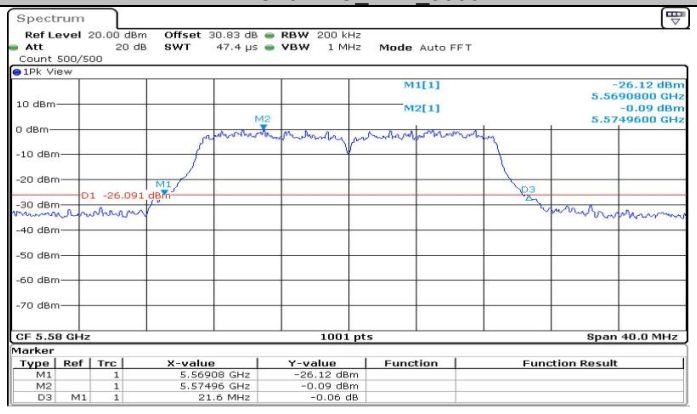
11AC20SISO_Ant1_5320



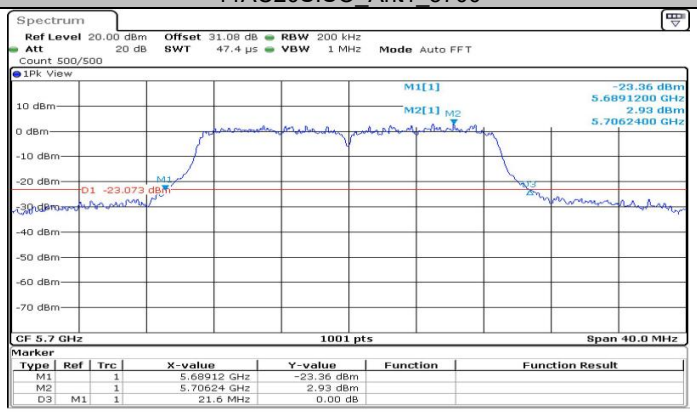
11AC20SISO_Ant1_5500



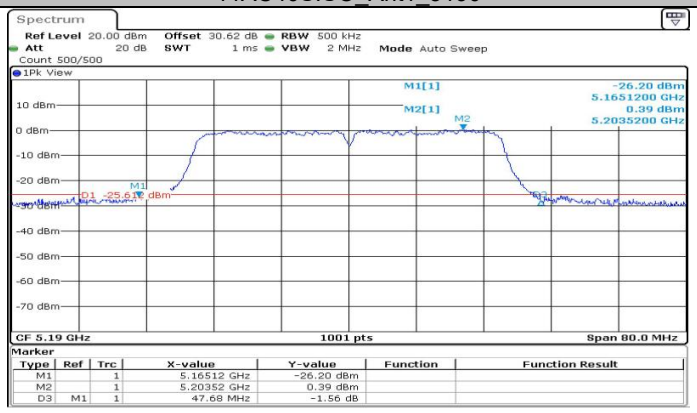
11AC20SISO_Ant1_5580



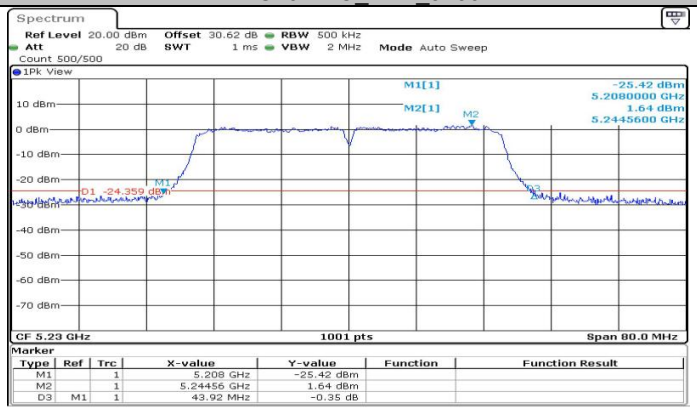
11AC20SISO_Ant1_5700



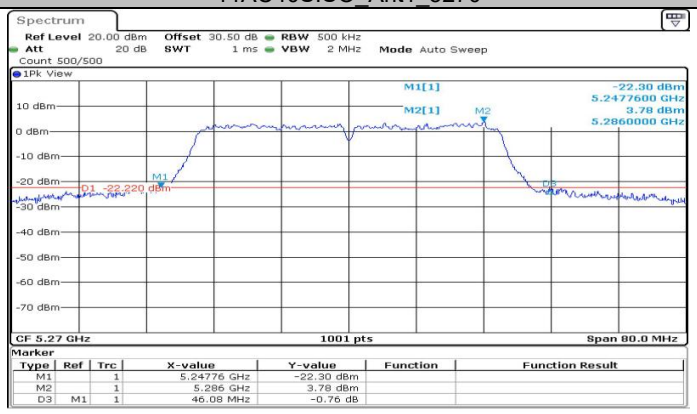
11AC40SISO_Ant1_5190



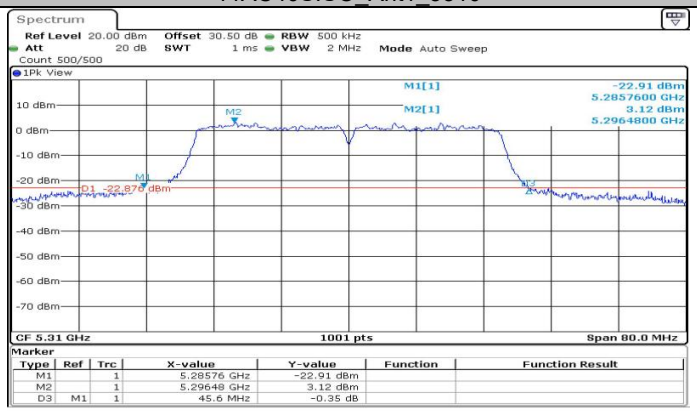
11AC40SISO_Ant1_5230



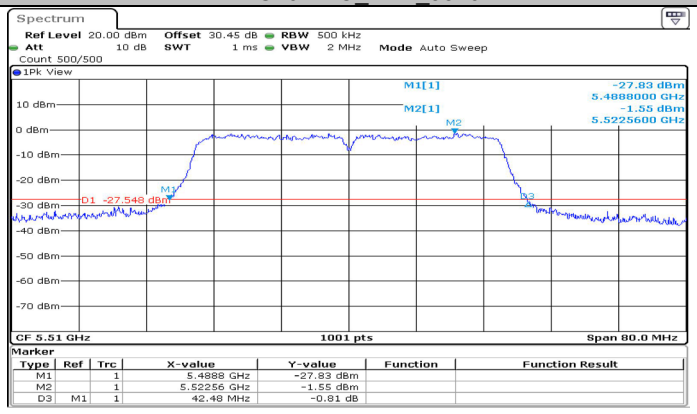
11AC40SISO_Ant1_5270



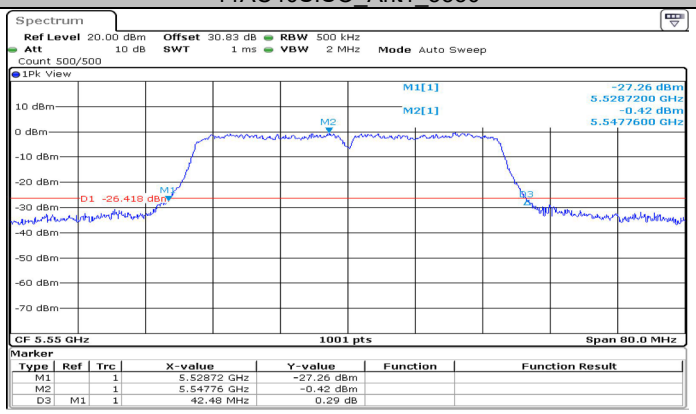
11AC40SISO_Ant1_5310



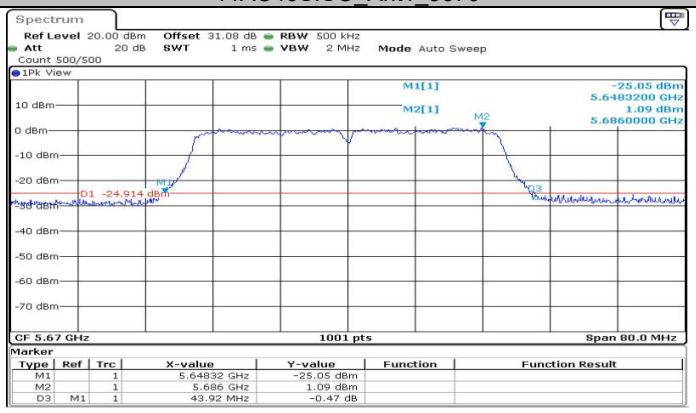
11AC40SISO_Ant1_5510



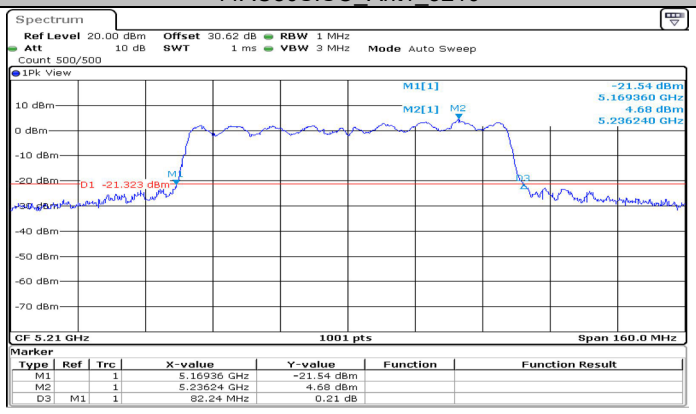
11AC40SISO_Ant1_5550



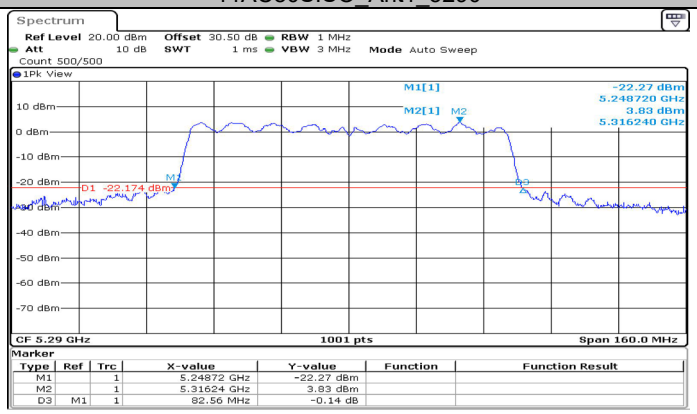
11AC40SISO_Ant1_5670



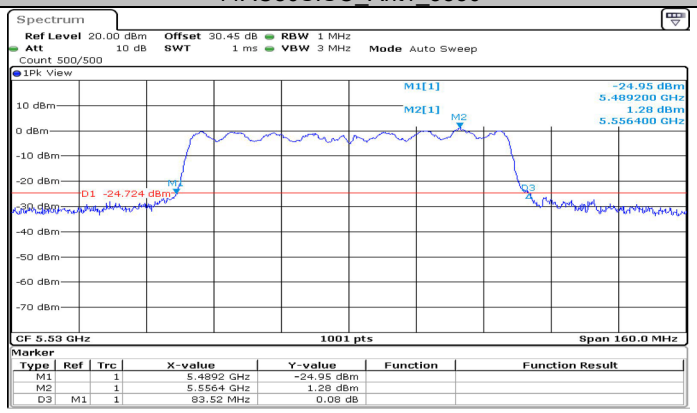
11AC80SISO_Ant1_5210



11AC80SISO_Ant1_5290



11AC80SISO_Ant1_5530



11AC80SISO_Ant1_5610